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# USSR Report

TRADE AND SERVICES



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## CONSUMER GOODS AND DOMESTIC TRADE

### DEFICIENCIES IN PRODUCTION OF CONSUMER GOODS IN UKRAINE

Kiev PRAVDA UKRAINY in Russian 17 May 79 p 1

[Editorial: "Goods for the People"]

**[Text]** The increase in the production of consumer goods is one of the crucial problems of the development of our industry in the forthcoming years.

At the October (1976) Plenum of the CC CPSU L. I. Brezhnev said that "this matter is extremely important both in an economic and a social sense. In the current five-year plan it acquires particular importance. We are mobilizing people for highly productive labor, for the overfulfillment of planned indicators, for counter plans and in several branches for additional assignments. This, of course, obliges us to better satisfy the needs of the population and to meet its growing incomes with an adequate amount of high quality consumer goods."

The industry of well-being is taking great strides. In our republic alone during the last three years 1.3 billion rubles worth of consumer goods have been produced in excess of the plan. From 1976 to 1978 the production of group "B" product increased by 12.1 percent.

An excellent example of the government's approach to solving the posed tasks is provided by the party organizations in L'vov. The authority of manufactured articles produced in L'vov is very high on the market. Television sets and shoes, dishes and clothing, knitted wear and candies enjoy an unchanged popularity. Today in the oblast the output of consumer goods is set up at all enterprises. This experience is deserving of most active support and the broadest dissemination.

Things are well organized in Zaporozh'e, Voroshilovgrad, Ivano-Frankovsk and many other oblasts. With an outstripping of five-year plan assignments the production of essential consumer goods is being developed at enterprises of the UkSSR Ministry of the Light Industry, the UkSSR Ministry of the Timber Industry, the UkSSR Ministry of Ferrous Metallurgy, the UkSSR Ministry of Construction Materials Industry and the Main Administration of the USSR Petrochemical Industry.

But have all reserves been brought into play? No. For example, in the Kirovograd, Vinnitsa, Nikolayev, Khmel'nitskiy and Cherkassy oblasts, it was emphasized at the April (1979) Plenum of the Central Committee of the Ukraine Communist Party, for the second year in a row they are lagging behind in fulfilling plans for the production of consumer goods. Many enterprises of heavy industry are working below their capacities. At many of them consumer goods are being produced in insignificant amounts and there is a lack of specialized shops and sectors.

Some associations, plants, factories, scientific-research institutes and planning and design institutes are slow in developing and assimilating new kinds of product. The capabilities for manufacturing goods from local kinds of raw materials are not being used in all cases.

The party organizations must more actively direct the efforts of the collectives toward eliminating shortcomings and must instill in workers a sense of responsibility for the task at hand and show more initiative and persistence and not place the blame, as it often happens, on all sorts of frequently dreamed up difficulties.

Particular discussion should be given to increasing the output of highest quality product. Every year more and more beautiful, durable and reliable things are appearing on the counters of stores. And this makes us happy. However, frequently the purchase brings only disappointment. As before from the conveyors of some enterprises we are getting dull colored fabrics, outdated footwear and home appliances that have to be taken in for repairs the day after they are bought. In several oblasts they are producing few manufactured articles bearing the honorary pentagon. In local industry the percentage of consumer goods on the whole bearing the mark of quality is lower than for the entire republic. A portion of the manufactured articles do not meet technical specifications and standards.

As a rule, the enterprises display the better examples of their goods at exhibitions and fairs. Often various commissions give them a high evaluation. In truth all is done from the heart. But the customer still isn't pleased when he asks the reasonable question: when will it be possible to acquire something good that was seen at an exhibition? The interest is far from idle. For it often happens that only two or three dozen of the hundreds of models are selected for assimilation, and only several kinds of manufactured articles are put into production. In other words some economic managers do not want to trouble themselves with excess cares. This practice is not good for anything. The brigade chief at the Kiev association "Bol'shevik", N. Sluitskaya, asked a fitting question in her letter to PRAVDA UKRAINY: "if it is at an exhibition it must be in the stores."

Deserving of the most serious attention on the part of party organizations and labor collectives is the output of goods for our small citizens. In the republic entire associations and enterprises specialize in children's clothing and shoes. The products of the Kharkov "Detodezhda" [children's clothing], the Kiev "Yunost'" [youth], the L'vov association "Progress", and the Khmel'nitskiy shoe factory are particularly well thought of. A

significant portion of these articles bear the mark of quality. At the same time the editors receive letters in which readers complain about the poor assortment of children's goods and about the defective output.

A child's clothing is a part of his wonderful world. Children are not indifferent toward their clothes. And in order that things for them be beautiful, stylish and comfortable, the problem must be solved from all angles, encompassing the entire chain from the creation of the models to the organization of mass production, from raising the requirements for raw materials to finishing and packaging.

The production of goods bearing the pentagon emblem must not be dropped from the agenda. The time is not far off when in our national capitol, Moscow, and in the stadiums of Kiev and other cities the flame of the Olympic games will burst forth. Before they get underway the republic plans to produce more than 350 million rubles worth of goods bearing the symbol of the Olympic games. Many collectives of various branches of industry are creatively solving the task placed before them. However, far from everything is being done to fulfill what has been planned. For example, all-union subordinated plants in Donetsk, Dnepropetrovsk, Kiev, Sumy and other oblasts are devoting inadequate attention to this matter which is of such importance to the state.

The workers of the industry of well-being are making justified charges against the builders who are outfitting new capacities for the production of consumer goods. The construction of the Dolina cotton-weaving factory, the Yemil'chino flax plant, the Zhitomir dairy, the Ternopol' meat combine and other important projects of the five-year plan is proceeding very poorly. Local party organizations must actively get socialist competition underway in the construction brigades and strengthen their control over time periods and quality of fulfillment of planned assignments and the pledges that were made.

As it was noted at the 25th CPSU Congress, in the production of consumer goods there are great reserves and this is where there is every opportunity for the oblasts, ministries and workers to show their initiative. To raise competition to a new height is to provide workers with more goods, and goods that are good and that are varied.

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## CONSUMER GOODS AND DOMESTIC TRADE

### PLANS FOR CONSUMER GOODS UNFULFILLED IN AZERBAIJAN

Baku BAKINSKIY RABOCHIY in Russian 12 May 79 p 2

[Article by A. Abbasov, chairman of a department of the Scientific Research Institute of Economics of the Azerbaijan SSR State Planning Committee, candidate of economic sciences: "More Goods - Good and Varied: The Guiding Line is Consumer Demand: Economic Review"]

[Text] When consumer goods are being discussed, it is difficult to find an indifferent speaker. This is easily understood because the problems of the consumer goods industry touches each of us in one way or another.

This is why there are no trivialities when there is discussion about the production of consumer goods. It should be noted that in recent years in the USSR the consumer goods industry has been developing at high, consistent rates. This branch of the national economy has received a great deal of development in the Azerbaijan republic as well. Particularly during the period following the Plenum of the Central Committee of the Azerbaijan Communist Party that was held in August 1969, due to the large amount of organizational work for raising scientific substantiation and overall balance of national economic plans, the strengthening of the control over the fulfillment of planned assignments and enforcing state discipline in all links.

In the CC CPSU decree, "The Fiftieth Anniversary of the First Five-Year Plan for the Development of the USSR National Economy," it is specially emphasized that "Soviet five-year plans are not just plans for economic construction but also for social progress. They serve as the achievement of the highest goal of socialist production - to more fully meet the material and spiritual needs of the people."

During the Tenth Five-Year Plan alone 38 new enterprises were built and put into operation to produce consumer goods, among these were a confectionery factory and meat combine in Kirovobad, a garment factory, a bakery and leavening combine and shoe factory in Baku, an outer knitted wear factory in Sumgait, canning factories in Khudat and Lenkorani and others. The machine park of light industry enterprises was updated by nearly a half; and in the food industry hundreds of measures were taken to implement new equipment and technology, and to automate and mechanize production processes.



As a result the amount of production of the light and food industries increased by 50 and 71 percent, respectively.

During the Tenth Five-Year Plan in the Azerbaijan SSR it was planned to increase the output of consumer goods by 51.4 percent, including light industry production by 40 percent, food industry by 31 percent, and cultural and household goods by 70 percent.

In the last three years of the Tenth Five-Year Plan the amount of consumer goods production in the republic's industry increased by nearly 27 percent, including winemaking by 52 percent and fruit and vegetable production by 32 percent, which considerably exceed the planned assignment.

However, it should be pointed out that we still are not making adequate use of reserves for expanding production and for increasing the quality of consumer goods. There are still enterprises that regularly do not fulfill planned assignments for the production of consumer goods and which violate plans for deliveries of product in the established amounts and assortments.

On the whole according to results for the three years of the current five-year plan the Ministry of Light Industry, the Ministry of the Food Industry, the "Azerrybprom" association and many enterprises of other ministries and departments that produce consumer goods failed to meet their plans for product output. What caused these disruptions? There are several reasons.

The non-fulfillment of planned assignments was caused by serious shortcomings in the organization of material-technical supply. Thus, due to the under-delivery of malt, sugar, cocoa beans, animal oil, syrup, glass containers and other such things enterprises of the Ministry of the Food Industry experienced disruptions in fulfilling the production plans for several kinds of output. According to the totals for the three years the non-fulfillment of the plan for the production of splint-slabs and furniture by enterprises of the Ministry of the Timber Industry was caused primarily by the fact that they were undersupplied by 19,000 cubic meters of lumber. There were significant shortcomings in providing the enterprises with machinery, equipment and spare parts for them.

One of the most important reserves for increasing the production of consumer goods is the full utilization of existing production capacities and the speeding up of putting new capacities into operation and their more rapid assimilation. The facts attest that this reserve is poorly used. Thus, for example, the level of assimilating production capacities at the Sumgait outer knitted wear factory is 61 percent; at the Stepanakert shoe factory it is 75 percent; at the new spinning factory of the textile combine imeni Lenin it is 16 percent; at the second segment of the Kirovabad worsted and cloth combine it is 40 percent; and at the Khyrdalanskiy brewery it is 45 percent, even though the normative time periods for their assimilation have long since expired.

As a result of just these enterprises there is an annual short output of product amounting to millions of rubles. These are the kinds of reserves

that we are not using! The time periods for the construction of such particularly important projects as the plants for the initial viniculture at the state winery imeni Kalinin in Zangelanskiy rayon and the state winery "Leningrad" in Kazakhskiy rayon, the refrigerator for the Kakhskiy cannery and the glass container plant in Nakhichevan' are unjustifiably dragging behind.

As before there is still the matter of raising the quality of goods. Data from checks that were performed by the Administration of the State Inspectorate of the trade and quality of consumer goods of the Azerbaijan Ministry of Trade and by the Azerbaijan republic administration of the USSR State Committee for Standards attest to this. Due to violations of standards requirements and technical specifications 31 percent of the total garments that were checked and 25 percent of knitted wear were reduced in grade and were returned for repair by enterprises of the Ministry of the Light Industry.

In the percentage of product bearing the State Mark of Quality we are still lagging behind the average indicator for the all-union republics: for the light industry by 1.6 percent, for the food industry by 1.5 percent, etc. The basic reason for the low quality of manufactured articles is the violating of technological discipline and the shortage of skilled workers. Such shortcomings cannot be ignored. The struggle for efficiency and quality must be waged in the branches at all levels.

The steadfast raising of the well-being of the people is the chief concern of the party. New evidence of this is the decree of the CC CPSU and the USSR Council of Ministers concerning "measures for the further specialization of agricultural production and the development of viniculture and wine-making in the Azerbaijan SSR." This programming document signifies a sharp rise in the economy of the republic and in many of its branches.

In responding to the party's concern with action, the workers of Azerbaijan industry must skillfully realize the enormous possibilities inherent in a socialist planned economic system and achieve new successes in the development of the production of consumer goods and on the basis of this provide for the further growth of national well-being.

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## CONSUMER GOODS AND DOMESTIC TRADE

### SATISFYING CONSUMER DEMAND

Kiev RABOCHAYA GAZETA in Russian 13 May 79 p 2

[Article by A. Tkachenko, candidate of economic sciences, Zaporozh'e:  
"An Economist's Opinion: The Demand Dictates"]

[Text] That demand dictates supply is a truism. For example, today there are consumers who have a need for ball-type handles; industry, having learned of this, immediately begins producing them. The market is saturated with what is needed and it is necessary to switch over to something else. This, of course, is an oversimplified picture, that in reality is much more complicated. But from these examples it is plain that at the basis of the correct functioning of the production-commerce-consumer chain is the study of demand.

What and how much should be produced? This question can be answered only by a well-planned system for studying consumer demand.

At present the modeling and designing of manufactured articles and the formation of a product assortment at enterprises proceeds from the actually achieved level: if something is in short supply then the orders for it are increased, if not it is taken off the conveyor. It also happens that a product in short supply ceases to be in demand and is allowed to accumulate in warehouses and under shop counters. This is connected with fluctuations in style, which often are a headache to production because the readjustment and reoutfitting of large production lines is a very complicated affair.

Of course, determining what branch and in what direction it is necessary to develop taking into account the prognosis of demand for goods is a function of the planning organs. But for the time being there is inadequate coordination of the long-range development of the branches and sub-branches that produce the goods; a serious reason for this is that the "influxes" of style often sharply increase the gap between the desire of the consumer and the capabilities of industry.



There is an institute that specializes in the study of the demand for goods. But, apparently, its work still is not very effective.

Sales personnel and merchants must pay attention to the magazines that discuss the study of consumer demand. If a man leaves the store without buying something, a demand has not been met.

The salesman must find out what product, in what size and fashion the consumer needed. Such data must then be generalized by the oblast trade administrations and then by the ministry. But in reality things are much simpler: the salesman often has neither the time nor the inclination to query consumers.

Stores must become laboratories for studying demand. Things are going well in the "Novinka" [Novelty] salons of Ukrshveypprom [Ukraine garment industry] but the majority of stores as before are only emphasizing the fulfillment of the goods-turnover plan.

And so it turns out that the gap between the amount of production of the republic's light industry enterprises and the orders of commerce over a period of several years remains at the level of 15 to 20 percent. This means that every fifth or sixth manufactured article does not find a buyer.

Unsold product is subject to discount, and the losses are to a small extent borne by the trade organizations. A large part of the losses is covered by the state budget. It would probably be more fitting if industrial enterprises bore such losses.

I submit how indignant the directors of enterprises will be: it is not our business to follow changes in demand, but it is commerce alone that is responsible for this. But it is no secret that industry often deviates from the recommendations of commerce and, having shown an interesting model on the wholesale market and then having reached a contract for it, in the process of mass producing it deviates from the model. Of course, for such "liberties" commerce fines the enterprises, sometimes even refusing to accept manufactured articles as unordered. But commerce must go on. Just because the factory deviated from the conditions of the contract you cannot close the store. And this is why like it or not the base accepts the commodity and hands it out to be sold.

It is thought that the chief indicator for the light industry enterprises should be the fulfillment of the assignment for each type and model of a manufactured article, rather than the amount of product that is sold in rubles. The plan should account only for what was produced in accordance with contracts. In other words, for what was dictated by demand.

## MANPOWER: LABOR, EDUCATION, DEMOGRAPHY

### INITIAL CENSUS RESULTS FOR 13 REPUBLICS

#### Turkmenia

Ashkabad TURKMENSKAYA ISKRA in Russian 25 May 79 p 4

[Text] 1. The regular All-Union Census was conducted in January 1979. According to census data, the Turkmen SSR population as of 17 January 1979 was 2.759 million.

2. The Turkmen SSR population has changed as follows:

1913	1,041,700
1940 (as of 1 January)	1,301,600
1959 (census of 15 January)	1,516,400
1970 (census of 15 January)	2,158,900
1979 (census of 17 January)	2,759,300

The Turkmen SSR population has increased by 600,400 persons, or by 27.8 percent, in the nine years since the 1970 census.

3. Changes in the Turkmen SSR urban and rural populations:

year	total population	including		in percent of total	
		urban	rural	urban	rural
1913	1,041,700	116,800	924,900	11	89
1940	1,301,600	459,200	842,400	35	65
1959	1,516,400	700,800	815,600	46	54
1970	2,158,900	1,034,200	1,124,700	48	52
1979	2,759,300	1,322,500	1,436,800	48	52

The urban population increased by 288,300 since 1970, including 244,000 through natural increment in the cities and 44,300 through the transformation of rural centers into urban centers and through migration.

Between the last two censuses, the natural population increment in rural areas was 369,500, but the rural population increased by only 312,100 for the reasons stated above.

4. The census recorded 1,362,400 men and 1,396,900 women.

The percentages of men and women changed as follows:

year	total population		urban population		rural population	
	men	women	men	women	men	women
1940	52	48	52	48	51	49
1959	48	52	48	52	48	52
1970	49	51	50	50	49	51
1979	49	51	50	50	49	51

5. Population present, by oblast:

	as of 17 Jan 79 (in 1,000)			in percent of total	
	total	including		urban	rural
		urban	rural		
Turkmen SSR	2,759	1,322	1,437	48	52
Ashkhabad*	315	315	--	100	--
Ashkhabadskaya Obl.	391	122	269	31	69
Krasnovodskaya Obl.	311	255	56	82	18
Maryyskaya Obl.	631	204	427	32	68
Tashauzskaya Obl.	530	160	370	30	70
Chardzhouskaya Obl.	581	266	315	46	54

\*including urban settlements subordinate to the city soviet

As of 17 January 1979, the Ashkhabad population was 312,000 and the Chardzhou population -- 140,000.

According to the 1979 census, Turkmenia has 15 cities, including 11 created during the years of Soviet power.

According to census data, the population of the Soviet Union as of 17 January 1979 was 262,442,000.

The census was conducted by census-takers. They recorded 2,754,000 people on the census sheets.

In order to ensure complete and correct counts, control checks were made during and after the census, resulting in the recording of an additional 5,300 people. Thus, a total of 2,759,300 people were recorded in the census, as indicated above.

Brief, preliminary census results were obtained from census worker estimates.

Detailed census data by territory, age, sex, nationality, language, level of education, marital status, family size and others are being developed

based on an established program by the Central Computer Center of the USSR Central Statistical Administration.

#### Uzbekistan

Tashkent PRAVDA VOSTOKA in Russian 13 May 79 p 2

[Text] In April 1979, the press published USSR Central Statistical Administration preliminary results of the 1979 All-Union Census. According to census data, the population of the Soviet Union as of 17 January 1979 was 262,442,000, including 15,391,000 in the Uzbek SSR.

Change in the USSR and Uzbek SSR populations is described by the following data:

	USSR	Uzbek SSR
1913 (for present borders)	159,153,000	4,334,000
1940 (for present borders)	194,077,000	6,551,000
1959 (census of 15 January)	208,827,000	8,119,000
1970 (census of 15 January)	241,720,000	11,799,000
1979 (census of 17 January)	262,442,000	15,391,000

The Uzbek SSR population has increased by 3,592,000 since the 1970 census, primarily through natural increment.

Changes in the Uzbek SSR urban and rural populations:

year	total population	including		percent of total	
		urban	rural	urban	rural
1913	4,334,000	1,060,000	3,274,000	24	76
1940	6,551,000	1,606,000	4,945,000	25	75
1959	8,119,000	2,729,000	5,390,000	34	66
1970	11,799,000	4,322,000	7,477,000	37	63
1979	15,391,000	6,350,000	9,041,000	41	59

The urban population increased by 2,028,000 since 1970, including 909,000 through natural increment in the cities and 1,119,000 through the transformation of rural centers into urban centers and through migration.

Between the last two censuses, the natural population increment in rural areas was 2,548,000, but the rural population increased by only 1,564,000 for the reasons stated above.

The census recorded 7,558,000 men and 7,833,000 women.

The percentages of men and women changed as shown in the table on the following page.

year	total population		urban population		rural population	
	men	women	men	women	men	women
1959	48.0	52.0	47.1	52.9	48.5	51.5
1970	48.7	51.3	48.3	51.7	49.8	51.1
1979	49.1	50.9	49.0	51.0	49.2	50.8

Population present, by oblast and for Tashkent and Karakalpakskaya ASSR:

	as of 17 Jan 79 (in 1,000)			percent of total	
	total	urban	rural	urban	rural
Uzbek SSR	15,391	6,350	9,041	41	59
Karakalpakskaya ASSR	904	382	522	42	58
Andizhanskaya Obl.	1,349	387	962	29	71
Bukharskaya Obl.	1,263	469	794	37	63
Dzhizakskaya Obl.	511	140	371	27	73
Kashkadar'inskaya Obl.	1,120	282	838	25	75
Namanganskaya Obl.	1,100	378	722	34	66
Samarkandskaya Obl.	1,784	724	1,060	41	59
Surkhandar'inskaya Obl.	895	173	722	19	81
Syrdar'inskaya Obl.	449	141	308	31	69
Tashkent'skaya Obl.	1,792	773	1,019	43	57
Ferganskaya Obl.	1,695	566	1,129	33	67
Khorezmskaya Obl.	744	150	594	20	80
Tashkent*	1,785	1,785	--	100	--

\*including urban settlements subordinate to the city soviet

Population of cities with 100,000 or more residents:

	population as of 17 Jan 79 (1,000)
Tashkent	1,779
Samarkand	476
Andizhan	230
Namangan	227
Bukhara	185
Fergana	176
Kokand	153
Chirchik	132
Margilan	111
Nukus	109
Karshi	107
Angren	106
Almalyk	101
Urgench	100

Seventy-eight cities have been created in the republic during the years of Soviet power. There are presently 14 cities with populations over 100,000.

The census was conducted by census-takers. They recorded 15,380,000 people on the census sheets.

In order to ensure complete and correct counts, control checks were made during and after the census, resulting in the recording of an additional 11,000 people. Thus, a total of 15,391,000 people were recorded in the census, as indicated above.

Brief, preliminary census results were obtained from census worker estimates.

Detailed census data by territory, age, sex, nationality, language, level of education, marital status, family size and others are being developed based on an established program by the Central Computer Center of the USSR Central Statistical Administration.

### Georgia

Tbilisi ZARYA VOSTOKA in Russian 26 Apr 79 pp 1-2

[Text] 1. The regular all-Union Census was conducted in January 1979. According to census data, the Georgian SSR population as of 17 January 1979 was 5,016,000.

2. The Georgian SSR population has changed as follows:

1913	2,601,000
1940 (estimate)	3,612,000
1959 (census of 15 January)	4,044,000
1970 (census of 15 January)	4,686,000
1979 (census of 17 January)	5,016,000

The Georgian SSR population has increased by 330,000 persons, or by seven percent, in the nine years since the 1970 census.

3. Changes in the Georgian SSR urban and rural populations:

year	total population	including		in percent of total	
		urban	rural	urban	rural
1913	2,601,000	666,000	1,935,000	26	74
1940	3,612,000	1,106,000	2,506,000	31	69
1959	4,044,000	1,713,000	2,331,000	42	58
1970	4,686,000	2,240,000	2,446,000	48	52
1979	5,016,000	2,601,000	2,415,000	52	48

The urban population increased by 361,000 since 1970, including 235,000 through natural increment in the cities and 126,000 through the transformation of rural centers into urban centers and through migration.

Between the last two censuses, the rural population decreased by 31,000 due to rural residents moving to cities, in spite of a natural increment.



4. The census recorded 2,363,000 men and 2,653,000 women. The percentages of men and women changed as follows:

year	total population		urban population		rural population	
	men	women	men	women	men	women
1939	49.9	50.1	48.9	51.1	50.3	49.7
1959	46.1	53.9	45.5	54.5	46.6	53.4
1970	47.0	53.0	46.7	53.3	47.2	52.8
1979	47.1	52.9	46.7	53.3	47.5	52.5

5. Population present, by autonomous republic and oblast: as of 17 Jan 79 (in 1,000)	in percent of total				
	including				
	total	urban	rural	urban	rural
Georgian SSR	5,016	2,601	2,415	52	48
(including:)					
Abkhazskaya ASSR	506	238	268	47	53
Adzharskaya ASSR	355	161	194	45	55
Yugo-Osetinskaya AO	98	41	57	42	58

6. Populations of cities over 100,000:

Tbilisi	1,066,000
Kutaisi	194,000
Rustavi	129,000
Batumi	124,000
Sukhumi	114,000

Thirty-eight cities have been created during the years of Soviet power.

The census was conducted by census-takers.

They recorded 5,005,000 people on the census sheets. In order to ensure complete and correct counts, control checks were made during and after the census, resulting in the recording of an additional 11,000 people. Thus, a total of 5,016,000 people were recorded in the census, as indicated above.

Brief, preliminary census results were obtained from census worker estimates.

Detailed census data by territory, age, sex, nationality, language, level of education, marital status, family size and others are being developed based on an established program by the Central Computer Center of the USSR Central Statistical Administration.

## Kirgizia

Frunze SOVETSKAYA KIRGIZIYA in Russian 25 Apr 79 p 2

[Text] 1. The regular All-Union Census was conducted in January 1979. According to census data, the Kirgiz SSR population as of 17 January 1979 was 3,529,000.

2. The Kirgiz SSR population has changed as follows:

1913	864,000
1940	1,528,000
1959 (census of 15 January)	2,066,000
1970 (census of 15 January)	2,934,000
1979 (census of 17 January)	3,529,000

The Kirgiz SSR population has increased by 595,000 persons, or by 20 percent, in the nine years since the 1970 census, primarily through natural increment.

3. The population, by oblast (as of 17 Jan 79, in 1,000):

Issyk-Kul skaya Oblast	353,000
Narynskaya Oblast	228,000
Oshskaya Oblast	1,546,000

4. Changes in the Kirgiz SSR urban and rural populations:

year	total population	including		in percent of total	
		urban	rural	urban	rural
1913	864,000	106,000	758,000	12	88
1940	1,528,000	332,000	1,196,000	22	78
1959	2,066,000	696,000	1,370,000	34	66
1970	2,934,000	1,098,000	1,836,000	37	63
1979	3,529,000	1,366,000	2,163,000	39	61

The urban population increased by 269,000, or 24 percent, and the rural population increased by 327,000, or 18 percent, since 1970. The urban population increased by 196,000 through natural increment and by 73,000 due to the transformation of rural centers into urban centers and to migration.

Between the last two censuses, the natural population increment in rural areas was 478,000, but the rural population increased by only 327,000 for the reasons stated above and others.

5. The census recorded 1,710,000 men and 1,819,000 women. The percentages of men and women changed as follows:

year	total population		urban population		rural population	
	men	women	men	women	men	women
1959	47	53	47	53	47	53
1970	48	52	47	53	48	52
1979	48	52	48	52	49	51



The gap between the number of men and the number of women is gradually being reduced.

6. Population present, by oblast:

	(as of 17 Jan 79, in 1,000)			in percent of total	
	including				
	total	urban	rural	urban	rural
Kirgiz SSR	3,529	1,366	2,163	39	61
(including:)					
Issyk-Kul'skaya Obl.	353	106	247	30	70
Narynskaya Obl.	358	40	188	18	82
Oshskaya Obl.	1,546	471	1,075	30	70

7. The population present on 17 January 1979 for Frunze was 533,000, and for Osh -- 169,000.

The census was conducted by census-takers. They recorded 2,525,000 people on the census sheets.

In order to ensure complete and correct counts, control checks were made during and after the census, resulting in the recording of an additional 4,000 people. Thus, a total of 3,529,000 people were recorded in the census.

Brief, preliminary census results were obtained from census worker estimates. Detailed census data by territory, age, sex, nationality, language, level of education, marital status, family size and others are being developed based on an established program by the Central Computer Center of the USSR Central Statistical Administration.

### Kazakhstan

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 11 May 79 p 3

[Text] 1. The regular All-Union Census was conducted in January 1979. According to census data, the Kazakh SSR population as of 17 January 1979 was 14,658,000.

2. The Kazakh SSR population has changed as follows:

1913 (estimate)	5,597,000
1939 (census of 17 January)	6,081,000
1959 (census of 15 January)	9,295,000
1970 (census of 15 January)	13,009,000
1979 (census of 17 January)	14,685,000

The Kazakh SSR population has increased by 1,676,000 persons, or by 13 percent, in the nine years since the 1970 census.

3. Population present, by oblast and for Alma-Ata, in 1,000 as of 17 January 1979 and in percent of the total population of the republic, is shown in the table on the following page:

	as of 17 Jan 79 (in 1,000)		in percent of total		
	total	including			
		urban	rural	urban	rural
Kazakh SSR	14,685	7,921	6,764	54	46
Aktyubinskaya Obl.	629	298	331	47	53
Alma-Ata*	914	914	--	100	--
Alma-Atinskaya Obl.	851	162	689	19	81
Vostochno-Kazakhstanskaya Obl.	877	535	342	61	39
Gur'yevskaya Obl.	370	219	151	59	41
Dzhambul'skaya Obl.	933	419	514	45	55
Dzhezkazganskaya Obl.	450	348	102	77	23
Karagandinskaya Obl.	1,253	1,069	184	85	15
Kzyl-Ordinskaya Obl.	566	354	212	63	37
Kokchetavskaya Obl.	617	213	404	35	65
Kustanayskaya Obl.	939	448	491	48	52
Mangyshlaksкая Obl.	252	220	32	87	13
Pavlodarskaya Obl.	806	459	347	57	43
Severo-Kazakhstanskaya Obl.	570	248	322	44	56
Semipalatinskaya Obl.	770	366	404	48	52
Taldy-Kurganskaya Obl.	664	264	400	40	60
Turgayskaya Obl.	268	83	185	31	69
Ural'skaya Obl.	581	218	363	38	62
Tselinogradskaya Obl.	808	461	347	57	43
Chimkentskaya Obl.	1,567	623	944	40	60

\*including urban settlements subordinate to the city soviet

#### 4. Changes in Kazakh SSR urban and rural populations:

year	total population	including		in percent of total	
		urban	rural	urban	rural
1913	5,597,000	541,000	5,056,000	10	90
1939	6,081,000	1,689,000	4,392,000	28	72
1959	9,295,000	4,067,000	5,228,000	44	56
1970	13,009,000	6,538,000	6,471,000	50	50
1979	14,685,000	7,921,000	6,764,000	54	46

Since 1970, the urban population has increased by 1,383,000, or 21 percent, and the rural population has increased by 293,000, or five percent.

#### 5. The census recorded 7,091,000 men and 7,594,000 women, with the following changes in percentages:

year	total population		urban population		rural population	
	men	women	men	women	men	women
1959	47.5	52.5	47.3	52.7	47.7	52.3
1970	48.1	51.9	48.2	51.8	48.1	51.9
1979	48.3	51.7	47.7	52.3	49.0	51.0

6. The populations of cities over 100,000 are:

Alma-Ata	910,000	Petropavlovsk	207,000
Aktyubinsk	191,000	Rudnyy	109,000
Gur'yev	130,000	Semipalatinsk	283,000
Dzhambul	264,000	Temirtau	213,000
Karaganda	572,000	Ust'-Kamenogorsk	274,000
Kzyl-Orda	156,000	Ural'sk	167,000
Kokchetav	103,000	Tselinograd	234,000
Kustanay	164,000	Shevchenko	110,000
Pavlodar	273,000	Chimkent	321,000

The census was conducted by census-takers.

They recorded 14,661,000 people on the census sheets.

In order to ensure complete and correct counts, control checks were made during and after the census, resulting in the recording of an additional 24,000 people.

Thus, a total of 14,685,000 people were recorded in the census, as indicated above.

Brief, preliminary census results were obtained from census worker estimates. Detailed census data by territory, age, sex, nationality, language, level of education, marital status, family size and others are being developed based on an established program by the Central Computer Center of the USSR Central Statistical Administration.

#### Belorussia

Minsk SOVETSKAYA BELORUSSIYA in Russian 29 Apr 79 p 3

[Text] 1. The regular All-Union Census was conducted in January 1979. According to census data, the Belorussian SSR population as of 17 January 1979 was 9,559,000.

2. The Belorussian SSR population has changed as follows:

1913 (estimate for present borders)	6,899,000
1940 (estimate for present borders)	9,046,000
1959 (census of 15 January)	8,056,000
1970 (census of 15 January)	9,002,000
1979 (census of 17 January)	9,559,000

The Belorussian SSR population has increased by 557,000 persons, or by 6.2 percent, in the nine years since the 1970 census.

3. The Belorussian SSR urban and rural populations have changed as indicated in the table at the top of the following page.

year	total population	including		in percent of total	
		urban	rural	urban	rural
1913	6,899,000	990,000	5,909,000	14	86
1940	9,046,000	1,925,000	7,121,000	21	79
1959	8,056,000	2,481,000	5,575,000	31	69
1970	9,002,000	3,908,000	5,094,000	43	57
1979	9,559,000	5,262,000	4,297,000	55	45

The urban population increased by 1,354,000 since 1970, including 552,000 through natural increment in the cities and 802,000 through the transformation of rural centers into urban centers and through migration.

Between the last two censuses, the natural population increment in rural areas was 94,000, but the rural population decreased by 797,000 for the reasons stated above.

4. The census recorded 4,445,000 men and 5,114,000 women. The percentages of men and women changed as follows:

year	total population		urban population		rural population	
	men	women	men	women	men	women
1959	44.5	55.5	44.6	55.4	44.4	55.6
1970	46.0	54.0	47.0	53.0	45.2	54.8
1979	46.5	53.5	47.1	52.9	45.8	54.2

According to the 1959 census, the number of women exceeded the number of men by 893,000 as a consequence of high losses of the male population during World War II. The gap in the numbers of men and women is gradually being narrowed.

5. Population present, by oblast:

	(as of 17 Jan 79, in 1,000)			in percent of total	
	including			urban	rural
	total	urban	rural		
Belorussian SSR	9,559	5,262	4,297	55	45
Brestskaya Obl.	1,363	614	749	45	55
Vitebskaya Obl.	1,385	771	614	56	44
Gomel'skaya Obl.	1,599	838	761	52	48
Grodenskaya Obl.	1,131	496	635	44	56
Minsk					
(and environs)*	1,276	1,276	--	100	--
Minskaya Obl.	1,556	560	996	36	64
Mogilevskaya Obl.	1,249	707	542	57	43

\*including urban settlements subordinate to the city soviet.

6. The populations of cities over 100,000 are shown in the table at the top of the following page:

Minsk	1,276,000
excluding urban settlements subordinate to the Minsk City Soviet	1,262,000
Gomel'	383,000
Vitebsk	297,000
Mogilev	290,000
Grodno	195,000
Bobruysk	192,000
Brest	177,000
Baranovichi	131,000
Orsha	112,000
Borisov	112,000

The census was conducted by census-takers.

Brief, preliminary census results were obtained from census worker estimates.

Detailed census data by territory, age, sex, nationality, language, level of education, marital status, family size and others are being developed based on an established program by the Central Computer Center of the USSR Central Statistical Administration.

#### Estonia

Tallin SOVETSKAYA ESTONIYA in Russian 26 Apr 79 p 1

[Text] 1. The regular All-Union Census was conducted in January 1979. According to census data, the Estonian SSR population as of 17 January 1979 was 1,466,200.

2. The Estonian SSR population has changed as follows:
- |   |           |
|---|-----------|
| 1940 (estimated for start of year and for modern borders) | 1,054,400 |
| 1959 (census of 15 January)                               | 1,196,800 |
| 1970 (census of 15 January)                               | 1,356,100 |
| 1979 (census of 17 January)                               | 1,466,200 |

The Estonian SSR population has increased by 110,100 persons, or by 8.1 percent, in the nine years since the 1970 census.

3. The Estonian SSR urban and rural populations have changed as follows:
- | year | total population | including |         | in percent of total |       |
|------|------------------|-----------|---------|---------------------|-------|
|      |                  | urban     | rural   | urban               | rural |
| 1940 | 1,054,400        | 354,100   | 700,300 | 33.6                | 66.4  |
| 1959 | 1,196,800        | 675,500   | 521,300 | 56.4                | 43.6  |
| 1970 | 1,356,100        | 881,200   | 474,900 | 65.0                | 35.0  |
| 1979 | 1,466,200        | 1,022,200 | 444,000 | 69.7                | 30.3  |

Between the last two censuses, the population continued to concentrate in urban settlements.

The urban population increased by 141,000 since 1970, including 56,300 through natural increment in the cities and 84,700 through the transformation of rural centers into urban centers and through migration. The rural population decreased by 30,900 between the last two censuses.

4. The census recorded 677,600 men and 788,600 women. The percentages of men and women changed as follows:

year	total population		urban population		rural population	
	men	women	men	women	men	women
1939	46.5	53.5	44.0	56.0	47.8	52.2
1950	43.9	56.1	43.8	56.2	44.0	56.0
1970	45.7	54.3	45.6	54.4	45.9	54.1
1979	46.2	53.8	45.9	54.1	46.9	53.1

The gap in the numbers of men and women is gradually narrowing.

5. As of 17 January 1979, the Tallin population was 430,000, and that of Tartu -- 104,000.

The census was conducted by census-takers. They recorded 1,463,200 people on the census sheets. In order to ensure complete and correct counts, control checks were made during and after the census, resulting in the recording of an additional 3,000 persons. Thus, a total of 1,466,200 people were recorded in the census, as indicated above.

Brief, preliminary census results were obtained from census worker estimates. Detailed census data by territory, age, sex, nationality, language, level of education, marital status, family size and others are being developed based on an established program by the Central Computer Center of the USSR Central Statistical Administration.

#### Armenia

Yerevan KOMMUNIST in Russian 1 May 79 p 1

[Text] 1. The regular All-Union Census was conducted in January 1979. According to census data, the Armenian SSR population as of 17 January 1979 was 3,031,000.

2. The Armenian SSR population has changed as follows:

1913	1,000,100
1940 (estimate)	1,320,300
1959 (census of 15 January)	1,763,100
1970 (census of 15 January)	2,491,900
1979 (census of 17 January)	3,030,800

The Armenian SSR population has increased by 538,900 persons, or by 21.6 percent, in the nine years since the 1970 census.



The republic population has increased primarily through natural increment.

3. The present urban and rural populations have changed as follows:

year	total population	including		in percent of total	
		urban	rural	urban	rural
1913	1,000,100	104,000	896,100	10.4	89.6
1940	1,320,300	375,400	944,900	28.4	71.6
1959	1,763,100	881,900	881,200	50.0	50.0
1970	2,491,900	1,481,500	1,010,400	59.5	40.5
1979	3,030,800	1,992,700	1,038,100	65.7	34.3

The urban population increased by 511,200 since 1970, including 263,700 through natural increment in the cities and 247,500 through the transformation of rural centers into urban centers and through migration.

Between the last two censuses, the natural population increment in rural areas was 164,400, but the rural population increased by only 27,700 for the reasons stated above.

4. The census recorded 1,476,500 men and 1,554,300 women. The percentages of men and women changed as follows:

year	total population		urban population		rural population	
	men	women	men	women	men	women
1939	50.6	49.4	50.8	49.2	50.5	49.5
1959	47.8	52.2	47.9	52.1	47.7	52.3
1970	48.8	51.2	48.9	51.1	48.7	51.3
1979	48.7	51.3	48.5	51.5	49.1	50.9

According to the 1979 census, the number of women exceeded the number of men by 77,800.

5. Populations as of 17 January 1979:

Yerevan	1,019,000
Leninakan	207,000
Kirovakan	146,000

The census was conducted by census-takers. In order to ensure complete and correct counts, control checks were made during and after the census.

Detailed census data by territory, age, sex, nationality, language, level of education, marital status, family size and others are being developed based on an established program by the central Computer Center of the USSR Central Statistical Administration.

## Latvia

Riga SOVETSKAYA LATVIYA in Russian 23 May 79 p 2

[Text] 1. The regular All-Union Census was conducted in January 1979. According to census data, the population of Soviet Latvia was 2,521,000 as of 17 January 1979.

The Latvian SSR population has changed as follows:

1913 (estimate)	2,493,000
1940 (estimate)	1,886,000
1959 (census of 15 January)	2,093,000
1970 (census of 15 January)	2,364,000
1979 (census of 17 January)	2,521,000

The republic population has increased by 157,000 persons, or by 6.6 percent, in the nine years since the 1970 census.

2. The Latvian SSR urban and rural populations have changed as follows:

year	total population	including		in percent of total	
		urban	rural	urban	rural
1913	2,493,000	939,000	1,554,000	38	62
1940	1,886,000	662,000	1,224,000	35	65
1959	2,093,000	1,174,000*	919,000	56	44
1970	2,364,000	1,477,000	887,000	62	38
1979	2,521,000	1,726,000	795,000	68	32

\*The 1959 population includes 60,000 urban residents living in rural areas administratively subordinate to urban settlements.

Since 1970, the urban population has increased by 249,000, including 63,000 through natural increment and 186,000 through the transformation of rural centers into urban centers and through migration.

3. The census recorded 1,161,000 men and 1,360,000 women in the Latvian SSR. The numbers and proportions of men and women changed as follows.

year	total population	including		in percent of total	
		men	women	men	women
1940	1,886,000	887,000	999,000	47.0	53.0
1959	2,093,000	919,000	1,174,000	43.9	56.1
1970	2,364,000	1,081,000	1,283,000	45.7	54.3
1979	2,521,000	1,161,000	1,360,000	46.1	53.9

According to the 1959 census, the number of women exceeded the number of men by 255,000 as a consequence of high losses of the male population during World War II. The gap between the numbers of men and women is gradually being narrowed.



4. As of 17 January 1979, the population of Riga, capital of the Latvian SSR, had reached 835,000, that of Daugavpils -- 116,000, and of Liyepaya -- 108,000. In 1939, only Riga had more than 100,000 residents; in 1969 Daugavpils passed the 100,000 mark, and in 1974 -- Liyepaya.

The population density in the republic increased from 33 per square kilometer in 1959 to 40 per square kilometer in 1979.

The census was conducted by census-takers. They recorded data on 2,517,000 people in the Latvian SSR on census sheets.

In order to ensure complete and correct counts, control checks were made during and after the census, resulting in the recording of an additional 4,000 persons. Thus, a total of 2,521,000 people were recorded in the census, as indicated above.

Brief, preliminary census results were obtained from census worker estimates. Detailed census data by territory, age, sex, nationality, language, level of education, marital status, family size and others are being developed based on an established program by the Central Computer Center of the USSR Central Statistical Administration.

#### Lithuania

Vil'nyus SOVETSKAYA LITVA in Russian 28 Apr 79 p 1

[Text] The regular All-Union Census was conducted in January 1979. In Lithuania, this was the third census in the years of Soviet power. According to census data, the Lithuanian SSR population as of 17 January 1979 was 3,399,000.

Changes in the Lithuanian SSR population over a more extended period are described by the following data:

1913 (estimate)	2,828,000
1940 (estimate)	2,925,000
1959 (census of 15 January)	2,711,000
1970 (census of 15 January)	3,128,000
1979 (census of 17 January)	3,399,000

As compared with the 1970 census (in the past nine years), the republic population increased by 271,000, or by nine percent.

The urban and rural populations have changed as follows:

year	total population	including		in percent of total	
		urban	rural	urban	rural
1913	2,828,000	367,000	2,461,000	13	87
1940	2,925,000	674,000	2,251,000	23	77
1959	2,711,000	1,046,000	1,665,000	39	61
1970	3,128,000	1,571,000	1,557,000	50	50
1979	3,399,000	2,062,000	1,337,000	61	39

During those nine years, the urban population increased by 491,000, or by 31 percent; the rural population decreased by 220,000. The increase in the urban population occurred through natural increment -- 172,000, and through the transformation of rural population centers into urban centers and due to migration -- 319,000.

The natural population increment in rural areas during those nine years was 33,000, but the rural population decreased, for the reasons indicated above.

Populations of cities of over 100,000:

Vil'nyus	481,000
Kaunas	370,000
Klaypeda	176,000
Shyauliyay	118,000
Panevezhis	102,000

The population density in the republic increased from 48 per square kilometer in 1970 to 52 per square kilometer in 1979.

According to census data, the republic population includes 1,605,400 men and 1,793,400 women. The proportions of men and women in the republic total population has changed as follows over the past 20 years:

year	in percent of total men	women	number of women per 1,000 men
1959	45.9	54.1	1,178
1970	46.9	53.1	1,131
1979	47.2	52.8	1,117

The gap between the numbers of men and women which developed as a consequence of high losses of the male population during World War II is gradually being narrowed in the republic.

The brief preliminary Lithuanian SSR census results were obtained based on census worker estimates. Detailed census data on population distribution by sex, age, nationality, language, level of education, marital status, family size and other indicators are being worked out by the Central Computer Center of the USSR Central Statistical Administration.

#### Ukraine

Kiev PRAVDA UKRAINY in Russian 25 Apr 79 pp 1 and 3

[Text] According to data from the census conducted in January of this year, the Ukrainian SSR population as of 17 January 1979 was 49,757,000.

The total republic population over a number of years has changed as described by the data in the table at the top of the following page.

1913 (estimated for present borders)	35,200,000
1940 (estimated for present borders)	41,300,000
1959 (census of 15 January)	41,900,000
1970 (census of 15 January)	47,100,000
1979 (census of 17 January)	49,800,000

The Ukrainian SSR population has increased by 2,700,000, or 5.6 percent, in the nine years since the 1970 census.

The republic urban and rural populations have changed as follows:

year	total population	including		in percent of total	
		urban	rural	urban	rural
1913	35,200,000	6,800,000	28,400,000	19	81
1940	41,300,000	14,000,000	27,300,000	34	66
1959	41,900,000	19,200,000	22,700,000	46	54
1970	47,100,000	25,700,000	21,400,000	55	45
1979	49,800,000	30,500,000	19,300,000	61	39

Since 1970, the urban population has increased by 4.8 million, including by two million through natural increment and by 2.8 million through the transformation of rural population centers into urban ones and by the shifting of some rural residents to the cities.

The natural increment in the rural population between the last two censuses was 400,000, but the rural population decreased by 2.1 million for the reasons indicated above.

Urban and rural population, by republic oblast:

	as of 17 Jan 79 (in 1,000)			percent of total	
	total	urban	rural	urban	rural
Ukrainian SSR	49,757	30,516	19,241	61	39
Vinnitskaya Obl.	2,046	720	1,326	35	65
Volynskaya Obl.	1,016	406	610	40	60
Voroshilovgradskaya Obl.	2,788	2,357	431	85	15
Dnepropetrovskaya Obl.	3,640	2,928	712	80	20
Donetskaya Obl.	5,160	4,599	561	89	11
Zhitomirskaya Obl.	1,597	706	891	44	56
Zakarpatskaya Obl.	1,154	437	717	38	62
Zaporozhskaya Obl.	1,946	1,384	562	71	29
Ivano-Frankovskaya Obl.	1,333	486	847	36	64
Kiyevskaya Obl.	1,924	871	1,053	45	55
Kiev	2,144	2,144	--	100	--
Kirovogradskaya Obl.	1,251	654	597	52	48
Krymskaya Obl.	2,184	1,468	716	67	33
L'vovskaya Obl.	2,583	1,373	1,210	53	47

[continued from preceding page:]

	as of 17 Jan 79 (in 1,000)			percent of total	
	total	urban	rural	urban	rural
Nikolayevskaya Obl.	1,242	751	491	60	40
Odesskaya Obl.	2,544	1,588	956	62	38
Poltavskaya Obl.	1,741	875	866	50	50
Rovenskaya Obl.	1,121	408	713	36	64
Sumskaya Obl.	1,463	776	687	53	47
Ternopol'skaya Obl.	1,163	364	799	31	69
Khar'kovskaya Obl.	3,056	2,293	763	75	25
Khersonskaya Obl.	1,164	677	487	58	42
Khmel'nitskaya Obl.	1,558	560	998	36	64
Cherkasskaya Obl.	1,547	687	860	44	56
Chernovitskaya Obl.	890	337	553	38	62
Chernigovskaya Obl.	1,502	667	835	44	56

The census recorded 22.8 million men and 27.0 million women in the republic. The percentages of men and women have changed as follows:

year	total population		urban population		rural population	
	men	women	men	women	men	women
1940	47.8	52.2	47.6	52.4	48.0	52.0
1959	44.4	55.6	45.2	54.8	43.6	56.4
1970	45.2	54.8	46.3	53.7	44.0	56.0
1979	45.8	54.2	46.5	53.5	44.6	55.4

According to the 1959 census, the number of women exceeded the number of men by 4.7 million as a consequence of high losses of the male population during World War II. The gap between the numbers of men and women is gradually being narrowed. Their ratios have basically equalized now for those under age 45.

Over the past 40 years, 142 cities have been created in the republic. In 1939, there were 20 cities with populations over 100,000; there are now 46, five of which have populations over one million.

Populations of cities which are oblast centers and of other cities with more than 100,000 residents (as of 17 January 1979, in 1,000):

Kiev	2,144	Zhdanov	503
Khar'kov	1,444	Voroshilovgrad	463
Dnepropetrovsk	1,066	Nikolayev	441
Odessa	1,046	Makeyevka	436
Donetsk	1,020	Gorlovka	337
Zaporozh'ye	781	Kherson	319
L'vov	667	Vinnitsa	313
Krivoy Rog	650	Simferopol'	302

Sevastopol	301	Ivano-Frankovsk	150
Poltava	279	Nikopol'	146
Dneprodzerzhinsk	250	Ternopol'	144
Zhitomir	244	Slavyansk	140
Chernigov	238	Lutsk	137
Kirovograd	237	Berdiansk	122
Cherkassy	228	Kommunarsk	120
Sumy	228	Lisichansk	120
Chernovtsy	218	Yenakiyevo	114
Kremenchug	210	Severodonetsk	113
Rovno	179	Konstantinovka	112
Kramatorsk	178	Stakhanov	108
Khmelnitskiy	172	Pavlograd	107
Melitopol'	161	Krasnyy Luch	106
Kerch'	157	Uzhgorod	91
Belaya Tserkov'	151		

Brief, preliminary results were obtained based on census worker estimates. Detailed census data is being worked out under an established program for population composition by sex, age, nationality, language, level of education, training, family status, family size and other indicators in a territorial cross-section.

#### Moldavia

Kishinev SOVETSKAYA MOLDAVIYA in Russian 28 Apr 79 pp 1, 3

[Text] 1. The regular All-Union Census was conducted in January 1979. According to census data, the Moldavian SSR population was 3,948,000 as of 17 January 1979.

2. The Moldavian SSR population has changed as follows:

1940 (estimated for present borders)	2,467,700
1959 (census of 15 January)	2,884,500
1970 (census of 15 January)	3,568,900
1979 (census of 17 January)	3,948,200

The Moldavian SSR population has increased by 379,300, or by 11 percent, during the nine years since the 1970 census.

3. The Moldavian SSR urban and rural populations have changed as follows:

year	total population	including		in percent of total	
		urban	rural	urban	rural
1940	2,467,700	331,500	2,136,200	13	87
1959	2,884,500	642,300	2,242,200	22	78
1970	3,568,900	1,130,100	2,438,800	32	68
1979	3,948,200	1,550,800	2,397,400	39	61

Since 1970, the urban population has increased by 420,700, including 150,600 through natural increment in the cities and 270,100 through the transformation of rural centers into urban centers and through migration.

4. The census recorded 1,862,300 men and 2,085,900 women.

The natural increment in rural population between the last two censuses was 250,500, but the rural population decreased, by 41,400, rather than increasing, for the reasons indicated above.

Populations of cities of over 100,000 (as of 17 January 1979):

Kishinev	503,000
Tiraspol'	139,000
Bel'tsy	125,000
Bendery	101,000

The census was conducted by census-takers. They recorded 3,944,900 persons on the census sheets. In order to ensure complete and correct counts, control checks were made during and after the census, resulting in the recording of an additional 3,300 persons. Thus, a total of 3,948,200 people were recorded, as indicated above.

Brief, preliminary census results were obtained from census worker estimates. Detailed census data is being developed in a territorial cross-section on the population distribution by sex, age, nationality, language, level of education, marital status, family size and other indicators based on an established program by the Central Computer Center of the USSR Central Statistical Administration.

#### Azerbaijan

Baku BAKINSKIY RABOCHIY in Russian 11 May 79 p 1

[Text] 1. The regular All-Union Census was conducted in January 1979. According to census data, the Azerbaijan SSR population as of 17 January 1979 was 6,028,000.

2. The Azerbaijan SSR population has changed as follows:

1913	2,339,000
1939 (census of 17 January)	3,205,000
1959 (census of 15 January)	3,698,000
1970 (census of 15 January)	5,117,000
1979 (census of 17 January)	6,028,000

During the nine years since the 1970 census, the republic population increased by 911,000, or 18 percent.

3. The Azerbaijan SSR urban and rural populations have changed as follows:

year	total population	including		in percent of total	
		urban	rural	urban	rural
1913	2,339,000	556,000	1,783,000	24	76
1939	3,205,000	1,157,000	2,048,000	36	64
1959	3,698,000	1,767,000	1,931,000	48	52
1970	5,117,000	2,564,000	2,553,000	50	50
1979	6,028,000	3,200,000	2,828,000	53	47



The republic urban population has increased by 636,000 since 1970, including 429,000 through natural increment in the cities and 207,000 through the transformation of rural centers into urban centers and through migration.

The natural increment in the rural population between the last two censuses was 544,000, but the total rural population increased by only 275,000 for the reasons indicated above.

4. The census recorded 2,941,000 men and 3,087,000 women. The percentages of men and women changed as follows:

year	total population		urban population		rural population	
	men	women	men	women	men	women
1939	51.2	48.8	50.2	49.8	51.8	48.2
1959	47.5	52.5	47.3	52.7	47.7	52.3
1970	48.5	51.5	48.9	51.1	48.1	51.9
1979	48.8	51.2	49.5	50.5	47.9	52.1

According to the 1979 census, the number of women exceeded the number of men by 146,000. The gap between the numbers of men and women is gradually being narrowed.

5. Population present for the Azerbaijan SSR, Nakhichevanskaya ASSR and Nagorno-Karabakhskaya AO (as of 17 January 1979, in 1,000 and percent):

	total (in 1,000)	including		in percent of total	
		urban	rural	urban	rural
Azerbaijan SSR	6,028	3,200	2,828	53	47
including:					
Nakhichevanskaya ASSR	239	63	176	26	74
Nagorno-Karabakhskaya Autonomous Oblast	161	71	90	44	56

6. Population of cities over 100,000 (as of 17 January 1979):

Baku	1,550,000
excluding urban settlements sub- ordinate to the Baku City Soviet	1,022,000
Kirovabad	232,000
Sumgait	190,000

During the years of Soviet power, 44 cities have been created in the republic.

7. According to data published by the USSR Central Statistical Administration, the country's population as of 17 January 1979 was 262,442,000.

The census was conducted by census-takers.

They recorded 6,025,000 people on the census sheets. In order to ensure complete and correct counts, control checks were made during and after the

census, resulting in the recording of an additional 3,000 persons. Thus, a total of 6,028,000 people were recorded, as indicated above.

Brief, preliminary census results were obtained based on census worker estimates. Detailed census data is being developed in a territorial cross-section on the population distribution in terms of sex, age, nationality, language, level of education, marital status, family size, and other indicators, based on an established program.

[Note that this is only 13 of the 15 republics; the RSFSR and Tadzhikistan were still unpublished at the time this report was assembled.]

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## MANPOWER: LABOR, EDUCATION, DEMOGRAPHY

### COMMENTARY ON CENSUS RESULTS

Leningrad Leningradskaya Pravda in Russian 20 May 79 p 4

[Article by K. Ivanov: "After the Census; Report from Statistical Administration"]

[Text] A preliminary report on the data of the All-Union Population Census of 1979 was recently published in the press. The census data are still being processed. The article below tells how Leningrad statisticians are doing this work.

As we know, the census blanks for the sixth all-union population census were filled out in January of this year. But this was only the beginning of a big and complex job.

At the beginning of February, the lists of each computation center in Leningrad and the oblast were packed in special portfolios and sent to the census division of the Statistical Administration of Leningrad Oblast and the city of Leningrad. Around 11,000 portfolios of this kind were received. The total length of the shelves on which they have been filed in strict order is almost 2 kilometers. They contain around 4 million census sheets with data on more than 6 million people.

A distinctive feature of this census is the computerized census blank. But these blanks cannot be fed into the computer without preliminary processing. This is being done by specially trained personnel. The personnel of enterprises and institutions and students have come to the aid of the Statistical Administration. In all, more than 200 people in Leningrad are now preparing census data for machine processing.

In one of the rooms of the Statistical Administration, Galina Sokolova, Yelena Frantsuzova and their friends are collating information according to territorial units--rayons and populated points. They check the census forms against the summary sheet sent in by each separate center and make up an inventory sheet for the portfolio. This extremely important document makes it possible to obtain preliminary census results even before the forms are fed into the computer.

In adjacent facilities, the forms themselves go through four processing cycles. The forms are encoded with special symbols for each reply given to questions requiring a written response. The forms are checked for completeness and accuracy. The quality of the forms is also controlled--after all, if it is poorly printed or carelessly filled out, the machine will "reject" it. Besides this, a control summary is filled out for each rayon or populated point--another document containing preliminary data. It will be used later to "check" the machine's accuracy.

This complex work is being painstakingly performed by T. M. Anokhina, A. I. Koroleva, V. S. Astrov, G. N. Belyavskaya and others. The entire four processing cycles require a great deal of concentration, precision and a considerable amount of time (the processing of each portfolio, containing information on an average of 650 persons, takes around 17 hours). The processing results are checked many times over: After all, errors could distort the results of the census. Besides this, the summary data obtained even before machine processing can be used immediately in the compilation of assignments for the next five-year plan and future plans for economic and social development.

"On 17 January 1979," A. V. Vasil'yev, deputy chief of the Leningrad Oblast and City Statistical Administration, explained, "the population of Leningrad was 4.588 million and the population of Leningrad Oblast was 1.519 million, while the population 20 years ago was 3.39 million in the city and 1.177 million in the oblast. The rate of decrease in the rural population of Leningrad Oblast is slowing down. For example, whereas the rural population of the oblast decreased by 37,000 between 1959 and 1970, it only decreased by 11,000 between 1970 and 1979. This is a comforting statistic because it means that workers are remaining in rural areas. Here are some more interesting figures: There are now 43 people in Leningrad Oblast who are more than 100 years old (in 1970 there were only 26). The oldest man living in our oblast is 110 and the oldest woman is 108."

The census department is sending the portfolios, one after another, to the branch computer center. The computers there process each portfolio within 4 minutes. Then the data tapes are sent to Moscow. Tremendous quantities of the most diverse tables will be compiled in the Central Computer Center. These will provide the answers to any questions concerning our nation's population.

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## MANPOWER: LABOR, EDUCATION, DEMOGRAPHY

### MECHANIZATION OF MANUAL LABOR

Moscow TRUD in Russian 11 May 79 p 1

[Article: "In Place of Manual Labor"]

[Text] A remarkable anniversary--the 50th anniversary of the First Five-Year Plan--is being commemorated on a broad scale by our nation and by the entire Soviet population. When you look at the frames of newsreels of those years, you are inspired by the people who were able to carry out the grand program of the first five-year plan ahead of schedule and you wonder how they did it without today's technology--after all, bricks were carried on a shoulder rack, and machine tool parts were sharpened with a file on a bench. Seeing all this, you naturally feel proud of our nation for having come so far along the path of industrialization.

We have already become accustomed to powerful machines which have spared million of hands the trouble of heavy labor. The first section of the Atomash Plant was recently opened in this nation where coal was mined with a pick and shovel only 50 years ago. In all, 36,000 automated and mechanized flowlines and 590 automated systems to control technological processes have been put in operation just during the years of the Tenth Five-Year Plan, and 2,200 industrial robots and automatic monitors have been manufactured. And there is no one left today who is amazed by machine tools with programmed control, tractors, tower and other cranes, or motor vehicles of various types, or even by the sizable figures pertaining to their production. For this reason, we will only cite one figure: More than 1.3 million people have transferred from jobs calling for manual labor to mechanized labor in industry in the last 3 years.

Valuable experience in the comprehensive mechanization of labor has been accumulated by innovators in Zaporozhskaya Oblast. The campaign they began under the slogan "Let manual labor be borne by machines" was approved by the Presidium of the AUCCTU and has become widespread. Enterprises in Chelyabinskaya and Kuybyshevskaya oblasts have been quite successful. The need for standard means of mechanization has been precisely calculated in the Lithuanian SSR and the production of these means for various branches of the economy has been organized. The Ministry of Construction, Road and

Municipal Machine Building has established an all-union industrial association for the manufacture of mechanization equipment. It is made up of project planning technological institutes, scientific-production associations and special design bureaus to draw up the plans for the comprehensive mechanization of shops and divisions.

In the work to eradicate manual labor, an example is being set for others by the leaders of Soviet industry--the Gor'kiy Motor Vehicle Plant, the Moscow Plant imeni Likhachev, the Sverdlovsk Machine-Building Plant imeni Kalinin, the Il'ichev Seaport and others. The establishment of two highly mechanized warehousing complexes at the Gor'kiy Plant has reduced the number of workers in the transportation shop by 2,350 and has produced a savings of more than 20 million rubles.

An important contribution to the work of automating and mechanizing labor is being made by trade-union organizations and the scientific and technical societies they sponsor, as well as inventors and efficiency experts.

It must be said, however, that today's fairly high rates of automation and mechanization are still not high enough to fill the needs of enterprises and construction projects. Objectively, they could be higher if it were not for the fact that several ministries and departments regularly fail to fulfill plan assignments pertaining to new technology. These include the USSR Ministry of Power and Electrification, the USSR Ministry of Water Resources, the USSR Ministry of Chemical and Petroleum Machine Building, the USSR Ministry of Timber and Wood Processing Industry, the USSR Ministry of Trade and others. It is indicative that the so-called auxiliary jobs are those in which the rate of mechanization is the slowest. In these jobs the proportion accounted for by manual labor is almost three times as high as in basic production. It cannot be said that the age of technology has already arrived in materials handling operations, warehousing and control operations, building sanitation services and so forth.

In all fairness, we must say that the demand for automatic loaders, containers, warehousing and harvesting equipment, and control and measurement devices is still not being completely satisfied in the economy. This is due, in particular, to the fact that the ministries concerned are not displaying enough energy in the augmentation of facilities for the production of all this equipment and are making poor use of the funds allocated for this purpose. Trade unions must institute stricter control over the construction of enterprises for the manufacture of mechanization equipment and work toward the quickest possible incorporation of these facilities.

But the work of mechanization and automation should not begin with orders for automatic loaders or cranes. Production processes must be investigated at all enterprises on the basis of plans for the purpose of determining what can be done through self-reliance and what will require the assistance of scientific and technical personnel and production innovators. An important role in this process could be played by the inspections, competitions and seminars conducted by trade unions and scientific and technical societies.

Public intersectorial committees for the automation and mechanization of production processes have been formed by the All-Union Council of Scientific and Technical Societies and by several republic, kray and oblast councils. A committee of this kind is performing active work in Lithuania. It has enlisted the services of the republic Technical Center, the local press and television and plant film studios to propagandize the latest methods of mechanization. With the assistance of the Lithuanian Gosplan, a catalog of mechanisms and devices has been compiled, manufacturing plants have been identified, and the mass production of the necessary equipment has been organized on a cooperative basis.

Unfortunately, not all of the committees are functioning this successfully, and some councils of scientific and technical societies, such as those in Volgograd, Gor'kiy, Ivanovo, Karaganda, Sverdlovsk and others, have not even formed committees of this kind.

Trade unions, organizations of scientific and technical societies and societies of inventors and efficiency experts, using their own forms and methods of work, should participate effectively in the resolution of problems connected with the comprehensive automation and mechanization of labor, thoroughly investigate the application of manual labor in the national economy, develop and incorporate special equipment, and oversee the fulfillment of plans for scientific and technical development.

Unfortunately, it sometimes happens that manual labor is "incorporated" even when the plans are still being drawn up for a new enterprise. For example, manual labor is required in some auxiliary operations at the recently opened rolling mill of the Azovstal' Metallurgical Plant in Zhdanov, and large quantities of dated equipment are being used in Ivanovo at the Factory imeni Balashov and are impeding the mechanization of auxiliary production processes. Trade unions and the organizations they sponsor of the All-Union Council of Scientific and Technical Societies and All-Union Society of Inventors and Efficiency Experts must arrange for public inspection of the plans for new enterprises, machines, equipment and technological processes and their appraisal from the standpoint of manual labor reduction requirements.

The replacement of physically heavy, manual labor with machine labor is a matter of tremendous statewide importance. Comrade L. I. Brezhnev remarked at the 25th Party Congress: "We will have to rely not on the augmentation of the existing labor force, but only on a rise in labor productivity. A sharp reduction in the proportional amount of manual labor, and the comprehensive mechanization and automation of production will be an essential condition for economic growth." Everything connected with the technical improvement of production should be given priority by trade-union organizations.



## MANPOWER: LABOR, EDUCATION, DEMOGRAPHY

### WOMEN'S RIGHTS IN SOVIET LABOR MARKET

#### Progress Report by AUCCTU Official

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 4, Apr 79 pp 116-117

[Article by A. P. Biryukova, secretary of the AUCCTU and chairman of the Women's Commission of the AUCCTU Presidium: "Yes, a 'Women in the USSR' Program Is Needed"]

[Text] In our nation, questions connected with the professional and personal life of woman are given the attention of the party, the government and the trade unions. Vivid proof of this may be seen in the implementation of measures outlined at the 25th CPSU Congress.

Many scientific research establishments, including six labor safety institutes of the AUCCTU, are investigating the problems of working women. Science and applied science conferences, seminars and symposiums are regularly held, and information on these topics is given extensive coverage in the press.

In connection with this, the selection of articles on "The Professional and Personal Life of Women" deserves attention. Their value consists primarily in the fact that the discussion of the problems of working women was participated in not only by highly skilled scientific personnel, but also by administrators of large industrial enterprises and trade unions and by the nation's honored women.

The articles dealt with a large and socially significant group of topics. Above all, these included the efficient scheduling of women's work and leisure time, the reduction of the number of women engaged in physical heavy labor and jobs with harmful working conditions, the physiological substantiation of work norms with consideration for sex and age differences and the elaboration of recommendations concerning the use of pregnant women on the job. Therefore, the publication of the set of articles entitled "The Professional and Personal Life of Women" in this journal should be regarded as a contribution to the development of theory and practice in these areas.



It must be said that some of the issues raised in the journal are still in the stage of scientific investigation, while some of them have been put to practical use. For example, the recommendations, compiled by the All-Union Scientific Research Institute of Labor Protection of the AUCCTU (Ivanovo) and the Main Administration of Therapeutic and Preventive Aid to Children and Mothers of the USSR Ministry of Health, "On the Use of the Labor of Pregnant Women in Light Work with Looser Time Schedules at Textile Enterprises" were approved by the USSR Ministry of Health, the USSR Ministry of Light Industry and the Central Committee of the Trade Union of Textile and Light Industry Workers. Recommendations for light industry and the chemical and petrochemical industry are now in the process of being approved. The journal has correctly pointed out the fact that it is taking too long to coordinate and approve these necessary documents and that not all of the objectives desired are covered in them.

We must agree with the authors' proposal concerning the expediency of drawing up a long-range "women in the USSR" program, which would cover all of the basic aspects of the technical, socioeconomic and legal regulation of women's labor. It is obvious that any proposals and recommendations for this program should be reinforced by scientifically substantiated economic estimates. Otherwise, the program will not be of any practical use.

There is hardly any need, for example, to prove that it is necessary to reduce the length of night shifts in the particular branches of industry where women make up the majority of the labor force, particularly the textile industry. This question has been brought up by the Institute of Economics of the USSR Academy of Sciences, the Central Scientific Research Laboratory of Labor Resources and the All-Union Scientific Research Institute of Labor Protection of the AUCCTU. It would be wise for these scientific establishments, which have abundant experience and well-trained scientific personnel, to investigate the possibility of including the study of this important matter among their planned scientific research projects.

The AUCCTU also agrees with the journal's views on the need to establish a single scientific coordinating center in the nation which could take on the responsibility of coordinating all studies on the problems of working women. In our opinion, one of the institutes of the USSR Academy of Sciences could become this kind of center.

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#### Report on Future Plans

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 4, Apr 79 pp 118-123

[Article by Professor V. S. Nemchenko, doctor of economic sciences and director of the Central Scientific Research Laboratory of Labor Resources, and Yu. M. Lukashuk, candidate of economic sciences and senior research associate (Moscow): "The Work Must Be Continued"]

[Text] Women Here, Women There...

Mass participation by women in production is an objective and irreversible process and one of the necessary conditions for social progress. Women make up more than half of the labor force in Soviet national production. Their labor is necessary to society and to themselves, and their families cannot get along with their wages. It is therefore completely natural that no one now seriously defends the slogan "Back to the kitchen!" But the difficulty here lies in the fact that she has not left the kitchen either! She bears most of the responsibility for raising her children and does all of the housework. This means that some kind of optimal combination of motherhood with more active and creative participation in social labor is needed.

The article by M. Ya. Sonin and others shows that the combination is still far from optimal. Women are actually carrying a double workload. The journal has printed the findings of sociological studies which testify that women who work in the production sphere have less than half as much leisure time as men. There is not enough time for advanced cultural or technical training and there is too little time for recreation. This is an extremely complex and important problem, particularly since life has begun to solve it in its own way: There has been a drop in the birth rate. It is clear to everyone that this is one of the worst solutions to the problem. The interests of social development, including the interests of individual development, require a larger family. The many demographers who maintain that there should be two or three children in each family are correct.

#### How Part of the Burden Can Be Lifted from her Shoulders

The Tenth Five-Year Plan envisages further improvement in the working and living conditions of working women. Within the near future, mothers will be offered a partially paid leave from work until their child's first birthday. The extension of this leave to 3 years has been proposed. It would seem that this proposal deserves consideration. The fact is that the provision of children in nurseries with good care requires expenditures which are becoming comparable to the labor expended in raising children at home. The benefits of raising small children at home become even more perceptible if we consider their improved state of health.

There are now broader possibilities for the use of part-time labor, which will benefit both the state and the women themselves. After all, the hourly productivity of labor in part-time work is generally higher than in a normal working day. This would also give the working mother considerable help in raising her children. Unfortunately, the right to hire part-time women workers is rarely exercised by enterprise administrators. And it is too bad. Surveys have shown that many mothers consider part-time work to be the best alternative for them.

The question of the need for extensive experiments with the so-called "flexible schedule," in which the worker himself sets the times for the beginning and end of his shift in strict accordance with the legally established length of the working day, has been unjustifiably ignored. In many cases, this would be a great help to mothers, since the "flexible work hours" would permit them to be at home when their children need them.

### Children, Husband and Kitchen

We would like to support the proposal that working mothers be given additional free time to take care of family affairs. We all know that the job of raising children is socially useful work of great importance. It would probably be wise to equate the time a mother spends caring for her children with working time. Naturally, this could be done in several different ways--for example, additional paid vacation time, the amount depending on the number of children, could be granted to a working mother, and she could either add these days on to her regular vacation or use these vacation days throughout the year (for example, during school vacations).

Here it is necessary to make one qualifying statement. It would be wrong to assess the raising of children in the home only in terms of labor expenditures. The process of raising children is similar in some ways to a long-term loan with high interest rates. A well-trained and healthy child will pay back the loan to society with interest. For this reason, the time used to raise the child is not only an expenditure, but also a definite result. If we wish to help working women to combine the time they spend raising their children with socially useful labor, we must seriously modify housework to make it more efficient, we must modify the structure of non-working time by considerably reducing the amount of time required for cooking, cleaning and laundry, and so forth.

The problems of enlisting industry's assistance in making housework more efficient and of improving the work of trade and the public service sphere were discussed in detail in Ye. V. Vas'kin's article. The author made sensible suggestions in regard to these matters, and their implementation could only be welcomed.

The involvement of men in housework is an extremely critical and somewhat ticklish matter. Logically, there are no arguments against this. The equal participation of women in national production and the formation of the family budget naturally raises the question of changes in the distribution of household responsibilities. These changes are needed just as much by men as by women, since they will provide new opportunities for communication within the family and create stronger friendship and accord in the household. But these changes can only be made after the total elimination of a psychological barrier that still exists in the public mind: Men are "not supposed to" do housework. This barrier can best be overcome if the process starts in school--the school can teach boys respect for the housework done by their mothers and can instill them with the desire and ability to help in this work. Even now, however, boys and girls are taught

different things: Girls are taught to cook and sew and boys are taught carpentry. Therefore, from childhood on the boy is given the idea that cooking, cleaning and so forth are woman's work.

#### Which Desk Should She Occupy?

One of the important prerequisites for sexual equality is the equality of educational opportunities. In our nation, legal and actual equality has been achieved in this area. A tendency toward feminization has even been noted and written about by M. Ya. Sonin. It is true that two-thirds of all secondary school graduates are girls and only one-third are boys. Moreover, the girls make a greater effort to enroll in higher and secondary academic institutions while the majority of the boys go to vocational and technical schools. For example, in the generation which grew up between 1946 and 1965, half of the boys were educated in the system of vocational and technical training while only a fraction of this number of girls received their education in this system.

The suggestion that a certain percentage of student slots in the vocational and technical schools be reserved for the female graduates of general educational schools raises, however, some doubts. This implies that the vocational and technical schools do not wish to admit girls. In reality, however, the girls do not want to go to these schools because of their as yet low prestige. For this reason, it is necessary to move in another direction--to elevate the prestige of the vocational and technical institutes and expand the list of professional fields in which girls are trained. The vocational and technical institutes must be reorganized more quickly and the training of women personnel must be carried out in accordance with the latest specifications.

On the other hand, the accessibility of all forms of education to women and the equality that has been achieved coexist with a paradox of sorts. The entire system of day, night and correspondence classes does not take the specific needs of the student mother into account. Each woman student who has a child searches on her own for a way to deal with the situation and frequently finds that abandoning her studies is the only way. Married students or students with children are not allowed to take rooms in student dormitories. A woman with a child in a student dormitory is actually an outlaw. The VUZ's do not allow students to take examinations without attending lectures, but this would be an acceptable form of study for some mothers.

Married women with children should be given an opportunity to continue their education in specialized academic institutions and to receive advanced training directly on the job (in the latter case, the women would receive the training during working hours and would be paid for this time).

## Professions and Qualifications

One essential condition for sexual equality is the freedom to choose any professional career. This freedom is stipulated in the Constitution of the USSR. In the interest of the women themselves, however, they are prohibited from entering some professions and specialties on the grounds of psychophysiological differences. The incorporation of the latest scientific and technical achievements in production and the widespread development of mechanized and automated production processes are giving rise to new professions and new requirements. On the one hand, there has been indisputable success in making the working conditions of women healthier and easier, but, on the other, new obstacles have arisen. In addition to new types of heavy and hazardous labor, jobs involving considerable nervous and mental stress are also contraindicated for women.

Therefore, the need to revise the list of professions closed to women (this kind of revision has already been conducted), which has been brought up several times in the press and was particularly well substantiated in the set of articles on "The Professional and Personal Life of Women," deserves thorough consideration.

At the same time, the need to revise the list of professions in which the labor of women is to be given preference has also been proposed. Obviously, this calls for a qualifying statement: This is good in those places where women have difficulty finding jobs--in new and small cities or in cities with a predominance of male labor. Naturally, this list should not take the form of a rigidly regulated document, since it could actually become a list of professions closed to men.

The worry, apparent in this section of the journal, that many women might still have to perform unskilled, heavy or hazardous labor is understandable. But this is not specifically a "woman's" problem and the only solution is the mechanization and automation of labor processes.

A statement made by one of the authors in this set of articles provides food for thought: The abundance of semiskilled female labor is impeding scientific and technical progress.... We repeat, this is not specifically a "woman's" problem even though it concerns women as well. It is true that when the cultural and technical level of manpower falls below the specifications set forth by scientific and technical progress, the rate of this progress slows down. The cultural and technical level of the population must be raised, and our society is doing this. The educational level of young people entering national production is higher each year. Actually, only the members of the generation whose school years coincided with the war years have an inadequate cultural and technical level. Naturally, there are more women in the middle and older generations and this is why the problem seems to be a "woman's" problem.



Two facts must be borne in mind when this problem is being solved. In the first place, it is extremely difficult to involve middle-aged and elderly persons in academic studies, especially women. In the second place, technical progress is giving rise to several new uninteresting and monotonous jobs which do not appeal to young people but which are more or less eagerly performed by middle-aged and elderly women with a low level of skills.

On the one hand, it is true that many of those engaged in manual physical labor are women. On the other hand, there is the opposite tendency: mental labor is being feminized in some respects. According to census data, the proportion accounted for by women among those engaged primarily in mental labor rose from 52 percent in 1959 to 59 percent in 1970; there was a corresponding decrease in the proportion accounted for by men. The extraordinary increase in the number of women employed in such spheres of the national economy as public health and education has already been discussed in the press.

#### Efficiency and Wages

It is extremely important to adapt the tools of labor to the physical and mental capabilities of women, which would contribute to the improvement of working conditions and would promote maximum labor efficiency. The application of ergonomics with respect to women has been quite limited, however, in technical studies. All machine tools and work positions are intended primarily for men, even though the anthropometric characteristics of men and women are quite different. Equipment designs do not take this into account. We do not have a single scientific institution in our nation which is seriously working on the problem of ergonomics.

In conclusion, we would like to discuss several questions connected with women's wages. The proposal concerning differentiated output norms is somewhat debatable. We are striving to assign a new function to norms--the function of eradicating all remaining traces of social inequality between the sexes. But this will cause it to stop performing its main function--the function of measuring labor. It appears that we should be moving in another direction: When the workload of women in production is lightened, this should not be charged to overhead costs, but to public consumption funds.

There is a prevalence of female labor in jobs requiring accuracy, agility, concentration and mental exertion, but these aspects of labor are rated lower on the salary scale than they should be. Scientific and technical progress in the developed capitalist countries has led to a situation in which the appraisal of these aspects of work, just as the responsibility factor (for the safety of the worker himself, his co-workers, the equipment and so forth) has risen considerably. It is obvious that the time has come for a critical reassessment of the methods used to determine the complexity of labor in connection with the increased significance of



the responsibility factor and mental and emotional stress. In view of the fact that many of these jobs are held by women, this will primarily be a solution to the problem of fair wages for women.

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## MANPOWER: LABOR, EDUCATION, DEMOGRAPHY

### READERS' LETTERS OFFER VIEWS ON FIVE-DAY SCHOOL WEEK

Moscow LITERATURNAYA GAZETA in Russian No 30, 16 May 79 p 11

[Series of letters from "Sounding Board No 2": "Five-Day School Week With a Day in Reserve"]

[Text] Almost a year and one-half has passed since the time when the SOUNDING BOARD experimental page appeared. Its essence is frank controversial rounds in a debate, while its goal is that of sounding out public opinion on the issue of new social experiments.

SOUNDING BOARD has combined some elements of sociology (survey of readers), of the press (mass information on innovations) and even the devices of television (duels upon command). The results of the argument are summed up by the expert opinion of specialists and a readers' jury.

The page has been handed over today to experts: specialists working in the field of public education, sociologists, psychologists and physicians—to people who mold the young generation and who have an opportunity to judge competently on the experiment of a "Five-Day School Week with a Day in Reserve."

Readers became acquainted with the experiment on the SOUNDING BOARD No 2 page (4 Oct and 13 Dec 1978 and 21 Feb 1979). Let us remind you that the experiment was conducted over a period of 12 years in three schools in Lipetsk in the primary grades. Teachers at these schools, by using the methods for teaching mathematics according to the method of P. Erdniyev (Kalmytskaya ASSR) and the Russian language of the basis of the material worked up by K. Moskalenko, docent of the Lipetsk Pedagogical Institute, have achieved accelerated mastery of the material in these subjects, thereby freeing an additional free day, Saturday, for the main portion of the pupils who are making normal progress. The children who are lagging behind come to school on this day for additional studies. The experiment received the name of "Five-Day School Week with a Day in Reserve."

Thus, we yield the floor to the experts and the readers' jury. The latter includes all those who wished to make an evaluation on a scale of points proposed by us. So you can get your bearings, we publish it once again.

### Scale for Expert Evaluations (in Points)

5. "An extremely useful initiative that is worthy of dissemination in all grades of the secondary school; it deserves the attention of ministries and departments, as well as of scientific institutions that shape the program for school instruction and the regulations for life, labor, education and protecting the health of children and adolescents."
4. "A useful initiative, but can be introduced only in the primary grades."
3. "While it is premature to introduce it, one must spread the experiment in other cities and schools in order thereupon to conduct a thorough study of all the consequences."
2. "A doubtful cause; the pluses are no more than the minuses. It is not worth terminating the experiment that has been begun, but one must also not expand the experiment."
1. "An extremely doubtful cause, an experiment without prospects."

### The Opinion of Experts

The board of experts and specialists consists of 12 individuals. We cite concise information about each of them so that readers might get an idea who precisely and on the basis of what experience (professional and scientific) he is passing judgment on the Lipetsk experiment.

Each expert will make his evaluation according to the 5-point system.

#### M. Antropova

M. Antropova is a corresponding member of the USSR Academy of Pedagogical Sciences, doctor of medical sciences and consulting professor at the Scientific Research Institute of the Physiology of Children and Adolescents of the USSR Academy of Pedagogical Sciences.

Much has already been rightly said about the shortcomings of the "five-day school week with a day in reserve." One of them is that children who are lagging behind do not receive a second day-off, which is already a large minus for the Lipetsk experiment: after all, these are children, as a rule, in feeble health.

Special research was conducted in the Estonian SSR by staff members of the hygiene laboratory of our institute for the purpose of ascertaining the influence of studies during a five-day week on the state of health of the pupils and on their mental and physical work capability (the experiment was checked in this republic in terms of a five-day school week without a day in reserve).

With an equal number of study hours (26) and approximately the same duration of time for the preparation of homework assignments for the Estonian schoolchildren who study five days a week, the study load allotted to each day was raised, but was distributed unequally when compared with the six-day schedule of study. They studied for 6 hours on two days, for 5 hours and 15 minutes on two days and for 4 hours and 30 minutes on one day. With a six-day week, they studied for 5 hours and 15 minutes on two days and for 4 and one-half hours on 4 days.

Among schoolchildren who studied under conditions of the five-day week, the problem of not getting enough sleep was observed more frequently. They got out into the fresh air less. Their capacity for work was also lower in comparison with those pupils who were on the usual schedule. Apparently, this is linked to the fact that after two days of rest, it is considerably more difficult to get back into study activity quickly than after one day-off.

Such was the data from the research on the five-day school week in Estonia. This forces us to be wary concerning the Lipetsk system, although it differs from the Estonian one. Serious pedagogical, psychological and physiological-hygienic justifications are required to persuade us of the advisability of such a schedule. We must be confident that "the five-day school week with a day in reserve" ensures more effective accomplishment of the tasks not only of an educational and upbringing nature, but also, which is no less important, of the tasks of promoting good health that the state has set for the school.

I select evaluation "2" on the basis of the suggested scale of points.

Yu. Vaytkyavichyus

Yu. Vaytkyavichyus is chairman of the board of the Lithuanian Society of Teachers and Doctor of Pedagogical Sciences.

The staff members of the Lithuanian Scientific Research Institute of Pedagogy interrogated 5,000 of the republic's pupils: "How do you relate to your studies?" "Learning is our chief duty"—we read the answers in the questionnaires. Then we put the question in another way: "If there were no universal compulsory education, would you go to school?" And quite a few of the upperclassmen responded negatively, pointing to the overwork, while some pointed to boredom and one-sidedness.

We often forget about gifted pupils, for no less than 30 percent of those in school fall into that category. Why must they sit alongside slow-learners and repeat over and over again that which they know so well? Why do we deal with such a priceless treasure—the giftedness of children—with such a lack of care? Why not spend just one day on studying that for which they have a divine gift and to which they will possibly devote their life?

The experiment in Lipetsk has shown that there are unutilized reserves. It is necessary to improve the methods of instruction in schools and to organize the structure of the lessons in a new way. It is probably necessary, to begin

with, to teach the teachers themselves in a new manner as well. Their responsibility is to teach students to think and to work independently with the textbook and with auxiliary reference materials.

It is necessary to utilize all that science has accumulated on this level. I think that one must reduce unproductively organized work outside of class. Do we not have too many activities being planned to which children do not like to go? In general, one must seek reserves. Schools must be offered the right to experiment.

I give a "5" to the Lipetsk five-day school week.

Yu. Zmanovskiy

Yu. Zmanovskiy is deputy director of the Scientific Research Institute of Pre-School Training of the USSR Academy of Pedagogical Sciences, doctor of medical sciences and professor.

During the past 10 years a wealth of experience of an upbringing and general educational nature has been gathered in pre-school institutions. They are very serious about readying children for school in the senior and preparatory groups at kindergartens. And we know that parents want to be with their children on Saturday. Only a very small number of them remain in the kindergartens on that day. For them, Saturday is free of any sort of study and upbringing lessons and is replete with games and forms of amusement.

Playing is the key form of life in pre-school childhood. But when the child comes to the first grade, his life changes sharply: the entire day he is engaged in nothing but study activity. How difficult it is for the first-grader to get accustomed to serious work right away! And here Saturday will help; Saturday must be made into a day only for play. There is no question that there must be diversity: one Saturday will be a sports and play day, another Saturday develops the artistic and creative potential of the child, while the third opens up to him the opportunities for interaction in the collective and the moral aspect of interrelationships among children. The esthetic and moral aspects of the personality of the child develop best of all in collective games. Lessons must also include didactic game elements. If Saturday is to be cheerful and playful, then the children themselves will be drawn to school that day without invitation.

In a word, I am for dissemination of the five-day week in the primary grades and give it an evaluation of "4" on the scale of points.

V. Kvachakhiya

V. Kvachakhiya is head of the Department of Applied Sociology of the Tbilisi State University, doctor of philosophy and professor.

I fully approve of the Lipetsk experiment.

After finishing secondary school, young men and women have only some idea about the prestige occupations; their orientation is often impractical. As a rule, in the questionnaire they name trades which obviously are not in keeping with their potentials and the requirements of society as well. An improper choice of one's path in life and unrealizable hopes lead, in general, to a negative result on the social plane. An inferior specialist who has not found his niche in life has a low level of social activity and a lowered tone in his sense of civic responsibility. Such is one of the conclusions of our sociological analysis.

It is necessary to allocate more time in schools for labor upbringing and to increase the opportunity to be with one's elders and to engage in domestic household chores—in a word, it is necessary to equip the program of instruction with game situations for the process of becoming an adult.

An increase in the reserve of free time for schoolchildren is socially mandated. Thus, let's give a "5" to this interesting experiment!

V. Kumarin

V. Kumarin is chief of the division of general problems of upbringing of the Ukraine Scientific Research Institute of Pedagogical Sciences and candidate of pedagogical sciences.

I read about the Lipetsk five-day week in SOUNDING BOARD No 2 not only with interest. It was also with a feeling of vexation in respect to the opponents of this experiment. I, for instance, have been long and deeply convinced that our present six-day week is an unsuccessful experiment that has been dragged out beyond all measure.

As the status of the school was defined almost 50 years ago: "Schools are open for pupils for a period of seven days.... Two days a week, but not in succession, are set aside from the total number of study days; one day is totally free of the usual studies and must be utilized for reading, excursions, plays and other independent children's pursuits for which new pedagogical forces are drawn upon. The other day is a semi-work day with the usual teaching personnel and is utilized for club and laboratory pursuits, essays, excursions and pupils' meetings." Thus it was written down in black and white in the first Law on the Soviet School, which was adopted in 1920.

It would be useful to remember this!

Give "5" points to the Lipetsk experiment.

S. Literat

S. Literat is director of studies for School No 130 and candidate of pedagogical sciences (Novosibirsk).



I read with satisfaction in LITERATURKA about the Lipetsk experiment. In 1963 there were many doubts and arguments when I proposed introducing a five-day work week in the Physics and Mathematics School associated with Novosibirsk University. And it's now been 15 years that the students in the Physics and Mathematics School utilize Thursday, the second day-off, for independent pursuits, work in laboratories of the institutes of the Siberian Department of the USSR Academy of Sciences, sports activities and tourist jaunts. Thursday has become a true "Day of Health."

I put in a "5" for the Lipetsk experiment.

T. Mal'kovskaya

T. Mal'kovskaya is head of the Department of Pedagogy of the Moscow State Pedagogical Institute imeni V. I. Lenin, doctor of pedagogical sciences and professor.

Additional free time is necessary for schoolchildren of the senior classes for greater in-depth independent work.

Teachers in the meantime dream of only one thing—all children must master skills and study with "excellent" and "good" grades. But such a situation is not so unattainable. We know of schools, let's say, the Leningrad Physics and Mathematics School, which kids from all corners of the city are longing to get into and where they study, generally speaking, well. But, so it turns out, when there is a deepened interest in certain subjects, a schoolchild still needs a breadth of ties. Clubs which have no relationship to physics and mathematics whatsoever enjoy immense popularity in this school: "Literary Thursdays," the "Shagi" [Steps] Tourist Club, and much, much more. Where do they find time for this? As a consequence of a scarcity of time, children are sometimes deprived of useful intercourse with people the same age. In that same school about which I spoke, adolescents avidly absorb knowledge and read supplemental literature; however, they do not know how to exchange the information that has been accumulated. For it is precisely in the process of exchange of knowledge that the activity of abstract thought develops more intensively. By getting used to being only a consumer, a man shuts himself off from others by concentrating on his own success.

The one-sided role—of the "strong" in respect to the "weak"—is mastered in the experience of intercourse. A man becomes used to feeling that he is a helper and turns out to be unprepared to grasp the interesting and original vision of the world, the spiritual essence and the values which work on the mind and heart of any man at various stages of growth. Time is necessary for confidential, informal systematically repeated conversation.

The "Five-Day School Week" would free only one day in the week, but would get us out of a thousand problems. It is here that the child's feeling toward himself during leisure time is to be found, as well as his new interrelations in the family, where the value directives of mothers and fathers have changed very much during recent years, and the organization of the atmosphere of interaction

with comrades, which is linked to an exchange of the values that characterize the spiritual wealth of a man. All these questions are no reason for negating the experiment. The Lipetsk teachers have laid the basis for the continuation of a serious and lengthy conversation on the fate of the rising generation. Their experiment deserves the highest evaluation—"5" points.

M. Nobatov

M. Nobatov is deputy director of the Scientific Research Institute of Pedagogical Sciences of the Turkmen Ministry of Education and candidate of pedagogical sciences:

In conduct lessons at the Department for Improvement of Skills of Directors of Schools operating in conjunction with the Turkmen State University imeni A. M. Gor'kiy. There were 70 directors from all regions of the republic present at one of the lessons. I told them about the Lipetsk experiment.

In the main, all of them were for it.

But when in Lipetsk, do as the people of Lipetsk do, but we have our own conditions here in Turkmeniya. In a rural locality, the parents of schoolchildren are almost never home from September to December, as they are all picking cotton. How can children be kept busy if they have two days off? We have many families with 7, 10 and 15 children here. Children at times study in three shifts in the city.

Thus, one must check all the pluses and minuses of the "five-day school week" with consideration given to the particular features of each republic.

To be sure, I'll give "3" points for the Lipetsk experiment.

M. Skatkin

M. Skatkin is a corresponding member of the USSR Academy of Pedagogical Sciences.

If you approach the evaluation of the "five-day school week with a day in reserve" according to that scale of points which was published in LG, then I would limit myself to "3" points.

At the present time, forecasting of the further development of the school for a period up to the end of the current century is being done in the USSR Academy of Pedagogical Sciences on behalf of the Ministry of Education. The basic ideas of this quest boil down to having the curriculum and upbringing plan of the school of the future determine the content of all the vital activity of the children's collective both in school and outside of it. Greater attention must be paid in curriculums and study programs than now to labor, sports, play activity (even in secondary and senior grades) and to art (not in the form of the pitiful lessons in singing and drawing to which we limit ourselves today). Furthermore, greater participation by children is planned in the organs of

student self-government, in Komsomol and Pioneer organizations and in the social and political life of adults.

Such a notion of the school of the future requires a substantial improvement and reduction in the content of programs and the remaking of textbooks. The key scientific concepts, facts and theories which are stored in one's permanent memory and are preserved over the course of an entire lifetime as the basis of culture, general education and one's Weltanschauung must remain in them.

If we create a school of this type in which all the conditions for the multifaceted development of the child's personality exist, then it will become a house of joy for children. From this point of view, the aspiration of the Lipetsk teachers to free time for the developing activity of pupils and to make optimum use of the study and upbringing process deserves support.

N. Talyzina

N. Talyzina is head of the Department of Pedagogy and Pedagogical Psychology of Moscow State University and corresponding member of the USSR Academy of Pedagogical Sciences.

I would give a "5" to the organizers of the "five-day school week with a day in reserve." One must give an "excellent" rating to teachers who seek the new and strive to alleviate the labor of schoolchildren, even just for one.

But it is difficult to surprise scholars on the whole with the "five-day week."

The results of scientific experiments provide the grounds to think that the periods of time for instruction can be substantially reduced without detriment to the quality of instruction. It is possible not only to introduce the "five-day school week," but also to teach children without homework assignments. It was shown in a number of experiments in Moscow, Batumi, Izhevsk and other cities that it is possible to give children more knowledge over a shorter period of time.

Individual models for scientifically valid instruction were worked up in the experiments. By utilizing them, it is now possible to restructure instruction for any subjects. But this is not a simple task.

A restructuring of programs and textbooks and other training for teachers is necessary—in a word, it is necessary to restructure everything in keeping with the data of modern science. In order to do this, it is necessary to combine the efforts of methods workers, didactics specialists and psychologists under the banner of a modern theory of learning.

I am confident that the path of incorporating scientific data in practice is shorter and more effective than an empirical search by individual teachers.

## I. Unt

I. Unt is head of the Department of Pedagogy and Methods at Tartu State University, doctor of pedagogical sciences and professor (Estonian SSR):

Ten years ago in Estonia there was also a "five-day school week" experiment, but without a day in reserve. The number of study hours from Saturday was divided among the five days of the week.

Personally, I specifically support the "five-day week with a day in reserve." It opens up the opportunity to improve the pupils' motivation to study. The prospect of yet another free day is a serious and thereby a fully natural motivation for greater diligence during study days. The level of activity of pupils at lessons grows and the need to "pull up" the "student with the 3" decreases, while the quality of knowledge rises.

A favorable new situation arises for domestic training, as the weekly schedule for the child coincides with the schedule and rhythm of labor and rest of the family and of the entire society and, in this way, schoolchildren are trained in joint activity with adults. For children whose domestic training has been disrupted, it is possible to organize Saturday groups with diverse creative activity.

Of course, mass introduction of the "five-day school week with a day in reserve" presupposes a comprehensive solution to all the problems connected with this and, to begin with, a reduction in programs, which was stipulated by decisions of the Party and government.

In any case, it is necessary to verify the new form of instruction in the various republics of our country. It obviously promises to be of great benefit to the Communist upbringing of the rising generation. Evaluation - "5".

## I. Khakhanova

I. Khakhanova is director of School No 160 (Baku).

There were many arguments in our school about whether the "five-day week with a day in reserve" was possible in the senior grades. As far as the primary grades are concerned, then the opinion turned out to be unified—the five-day week is capable of being implemented here and is simply necessary. To some extent it is existing spontaneously now; on Saturdays there are markedly less children in classes—the five-day work week of the parents is having its effect.

Why are we for the five-day week? The basic arguments are cited in the articles by the organizers of the experiment. The idea of a "reserve day" is very attractive: both as an incentive, as well as an additional day for pulling up the laggards. To be devoting oneself to children additionally after lessons, as is being done now, is very unproductive—the teachers and children are tired out for the day. But it's necessary to devote time to them—the new programs require this.

Competent pupils also need a reserve day. Here the experiment of the people of Lipetsk, it seems to us, can and must be developed.

Let us give the experiment of our colleagues from Lipetsk a "4."

\* \* \*

Let's total the results. The board of specialists gave the "five-day school week with a day in reserve" the following evaluation: 2 (one expert), 3 (one expert), 4 (two experts) and 5 (eight experts).

The average score in the appraisal by the specialists was 4.4.

#### The Opinion of the Readers' Jury

There were 2,600 readers who wished to propose an evaluation for the experiment of the "five-day school week with a day in reserve."

More than 1,500 letters from 500 cities and population points of the country arrived addressed to the SOUNDING BOARD No 2 experimental page. Included in this mail were 230 letters signed by entire families, by the collective of one or several grades and, at times, by tenants sharing an entry porch of an apartment house, by staff members of some pedagogical institution or by a group of people not having any relation to pedagogy.

What were these evaluations like?

There were 2,233 people who evaluated the Lipetsk experiment by giving it "five" points, 72 proposed "four," 84 writers felt that the Lipetsk five-day week deserved a "three," while 94 experts selected "two" on the scale of points. There were 117 readers who called this experiment "extremely dubious, without prospects" and evaluated it with a "one."

Now concerning the writers of the letters. There were 340 people engaged directly in teaching activity or the organization of the educational process and who work in scientific institutions. Among them were 20 supervisory employees in the system of public education and pedagogical scholars having scientific degrees. Their average score was 3.7, while, at the same time, ordinary teachers evaluated this experiment with 4.5, almost the same as the expert specialists.

Among medical workers, a reverse rule is observed: ordinary workers evaluated it with a score of 4.6, while those "with degrees" and occupying supervisory positions evaluated it higher (4.8).

Engineers, office workers, workers and kolkhoz farmers evaluated the experiment with a solid "four." Retired persons gave it a "three plus" (3.5).

More than 600 schoolchildren turned out to be on our "readers' jury"! We had previously never received so much mail from juveniles. Their average evaluation,



4.8, coincides with the evaluation of medical personnel occupying supervisory positions and having degrees. The mail from the children is the most emotional. One letter even contains an ink imprint of the paw of a dog, which during winter days the schoolchild cannot find the time to walk. "We," writes the girl pupil from Kuybyshev, "get up at seven in the morning and traipse to school, while our parents very quietly rest. Is this really just?! And if someone studies in the second shift, then he won't see his parents at all!" (Lena Rubtsova).

Incidentally, of the 600 expert schoolchildren, only 8 of them evaluated the experiment with a "two" or "one."

The average score of the combined readers' jury was 4.6.

Let us cite the arguments expressed by the "readers' jury" in favor of the "five-day week with a day in reserve."

"The five-day week" will heighten progress—there were 355 readers who counted on this.

An additional incentive for good studies will appear—so 205 people thought.

The reserve day means additional time for self-education, visiting theaters and seeing motion pictures, going to clubs dedicated to one's interests and sports pursuits—thus 550 answered concerning the experiment.

There were 251 letter writers who linked an improvement in the health of children to the "five-day week."

There were 309 people who pointed out the possibility of greater intercourse between children and their parents.

"The five-day week" will enable one to pursue his favorite activity—so thought 101 people; 64 felt that independence in work would develop among children, while 101 felt that work habits would develop.

There were 46 readers who responded approvingly to the fact that "the five-day week with a day in reserve" would to some extent alleviate the load on the teacher.

The arguments "against" in the main boil down to three factors: the "five-day week with a day in reserve" would divide the class into "good" and "poor" pupils. There were 28 people worried by this. There were 44 writers who felt that an additional day-off would be utilized to no benefit for idle (and harmful) intercourse with the street. There were 32 people who pointed out the fact that the load on children could increase. There were 9 people who were ill-disposed to the "five-day week" owing to the fact that they fear an increase in time-off for teachers.



Such was the data from our examination of the mail that arrived addressed to SOUNDING BOARD No 2 on the matter of the experiment with the "five-day school week with a day in reserve."

The editors express thanks to all readers for their active participation in the debate tournament on SOUNDING BOARD.

We are extremely grateful also to the following students of the department of Journalism of Moscow State University: N. Kirilenko, L. Yezzhalkina and T. Andreyeva, who, on behalf of LG, have been engaged for the second year in research on the mail coming into SOUNDING BOARD.

#### SOUNDING BOARD No 2 Sums Up the Results

With this we terminate the discussion of the Lipetsk experiment with "the five-day school week with a day in reserve." The editors would like to direct the attention of the USSR Ministry of Education, of corresponding ministries of the Union republics, the USSR Academy of Pedagogical Sciences and other organizations on whom the fate of this experiment will depend to the fact that the idea of the "five-day week with a day in reserve," which has been implemented in Lipetsk over the course of a long period of time, has received support in the discussion in LITERATURNAYA GAZETA from both specialists, as well as from a broad range of readers. The average evaluations in the appraisal by the specialists (4.4) and by the readers' jury (4.6) almost coincide.

The discussion in LG has shown that at the present time serious problems requiring thoughtful, goodwill examination of experimental data (including the results of the Lipetsk experiment as well) have piled up in the system of public education. This data could promote a positive resolution of the urgent questions.

The editors are hoping to inform the readers of LG in addition on possible solutions relative to the five-day school week with a day in reserve.

#### SOUNDING BOARD No 3 Continues the Contest

The idea of the "five-day school week" for discussion on the SOUNDING BOARD page was suggested by reader Yu. Sokolov from Chkalovsk. According to the terms of the contest, the author of the theme for the page was honored with a prize—a subscription to LITERATURNAYA GAZETA for 1979.

We also sent similar acknowledgements to the authors of two other proposals recognized by the editors as the best, "The Combine of Enterprises of People Who Work at Home" (Z. Murashova, city of Vyazemskiy, Khabarovskiy Kray) and "Simultaneously on Vacation!" (G. Plastinin, city of Kirov).

We now face a choice: whether to arrange a debate tournament around an experiment in Kiev where the workers and office workers at one of the enterprises leave for vacation at the best time of the year at once as an entire shop or

to undertake a debate on the principles and practice of organizing at-home work? Which would our readers prefer?

We are also ready to accept new ideas if the experiments suggested for discussion turn out to be more interesting. The previous prize, a subscription to LG for 1980, will be awarded. We accept suggestions until 1 August of this year.

We ask that you send in letters marked "SOUNDING BOARD."

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CSO: 1823

## TRANSPORTATION

### MILITARY HELP BUILD THE BAYKAL-AMUR TRUNK LINE

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 22 Feb 79 p 2

[Article by V. Vasil'ev: "Soldiers Build the BAM"]

[Text] Soldiers-railroaders stride in the forefront of BAM builders. The Baykal-Amur Trunk Line has become to them a university of civic maturity and work skills. This is described by the TASS correspondent especially for SOTSIALISTICHESKAYA INDUSTRIYA...

#### He Comes from the KamAZ

The fate of Private Aleksey Safronov became unexpectedly linked to the KamAZ [Kama Automobile Plant] and BAM. Until his conscription into railroad troops the young workers assembled heavy-duty trucks at the KamAZ. Aleksey had not expected at the time that soon he would be operating one of these trucks. It is not impossible that he may have assembled with his own hands precisely the truck assigned to him.

The new soldier rapidly found a common language with his "landman." The skills acquired at the KamAZ proved useful to him in his new job, while advice from experienced comrades helped him to rapidly master the complex northern routes. Now Private A. Safronov transports earth for the roadbed of the BAM line. Given the daily quota of 14 trips, Aleksey makes as many as 30. Within less than 2 years of his prescribed service this leading truck driver of the subdivision has already long fulfilled the three-year target.

Currently A. Safronov conducts a school of advanced knowhow. He is going to pass on his truck to the best man among the young troops.

He says: "On returning to the KamAZ I will tell my comrades how our trucks serve the construction project of the century."

## A Father's Letter

...The disk of the coupling clutch of the track-laying machine flew loose. Unless this damage is repaired as quickly as possible, the engine will be immobilized by frost. All hope was placed in the speed and skill of the repairmen. The mobile repair shop arrived within a few minutes. Only half an hour was needed by Private A. Orlov and his comrades to replace the broken-down part.

Before his army service Anatoliy Orlov had worked as a lathe operator in the depot of the town of Naro-Fominsk near Moscow. He finished his trade school under the guidance of his father who has for several years now been bearing the title of "Expert Craftsman." Soon the younger Orlov was acknowledged as the best among the young workers.

The army took into account Anatoliy's occupational skills and entrusted to him the management of the repair shop. The facilities of the subdivision are in operation at many spots that sometimes lie tens of kilometers apart. Morning till evening the soldier remains "on wheels," as the saying goes. Fairly often the most varied work has to be done, and hence he has learned the allied skills of locksmith, arc and gas welder, and milling machine operator.

Recently Anatoliy received from his father a letter announcing that the latter was awarded the Medal "For Distinction in Labor." Private A. Orlov also had a joy to share: he too was given an award--the Medal "For Construction of the Baykal-Amur Trunk Lines."

## Work Hardening

"An Excellent Worker--An Excellent Soldier" was the name of the evening entertainment organized by the Komsomol members of the subdivision of mechanizers. Experienced soldiers and new recruits were sitting in the servicemen's canteen over a cup of tea.

The first to speak about himself was the young party member Sergeant Yuriy Petrikov. Before his army service he had worked at an enterprise in the Donbass. For his labor accomplishments he had been awarded the Komsomol Central Committee Badge "Young Guard of the Five-Year Plan." At the BAM the serviceman became a senior-category locksmith and was awarded two certificates of merit by the Komsomol Central Committee.

His life is largely resembled by the labor career of Private Tagir Shaybakov. While at the Ufa Telephone Apparatus Plant, he became a shockworker of communist labor, and now that he is in the army he is recognized as a most skillful locksmith. The locksmith from Minsk Genrikh Geben' is now one of the leading innovators among the BAM's railroad soldiers, and commands the excellent detachment.

The opinion of everyone present at the evening entertainment was clearly expressed by Sergeant G. Geben': Hard work helps all servicemen to pass with honors the BAM test. And the army school, the strenuous work on the Trunk Line, is the best school for the serviceman in reserve.

## TRANSPORTATION

### CONSERVATION OF FUEL AND POWER IN TRANSPORT

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 5, May 79 pp 45-52

[Article by Dr Technical Sciences A. Chulkov: "Ways of Saving Fuel and Power Resources in Transport"]

[Text] Currently both in the USSR and abroad intensive studies of ways to save and utilize more efficiently fuel and power resources (FPR) in transport are underway. The major accomplishments made in FPR savings on USSR transport in the last 15-20 years are widely known. The planned nature of Soviet economy, the growth of this country's economic potential, and the ineluctable scientific and technical progress in every branch of the national economy assure further successful work in that direction.

Transport is a major consumer of FPR, chiefly of the scarce light petroleum fractions: gasoline, aviation kerosene and diesel fuel, for which future demand will sharply increase. This accounts for the great attention currently being paid by the CPSU Central Committee and the Soviet Government to problems of economizing on this type of fuel and power resources.

We will consider the principal ways of saving FPR in various types of transportation on the basis of the published domestic and foreign research findings and design-and-experimental studies that are either in their final stage or beginning to find practical application.

Motor transport consumes the greatest amount of the light petroleum products and hence it contains the greatest potential for saving FPR (calculated at 70-80 percent of the total potential FPR savings for all types of transportation). The considerable potential for fuel savings in motor transport is demonstrated by the data on world competitive tests of motor vehicles according to which the unit fuel consumption per mileage unit has dropped to one-fifth between 1939 and 1973. We will consider certain tendencies bearing on this problem. This primarily concerns the dieselization of transport, that is, the increase in the share of operations performed by diesel-engined automobiles.

This tendency is a major one in the system of fuel-saving measures, since the diesel engine is 25-30 percent more economical than the gasoline engine.

Since until recently diesel engines have been chiefly installed in heavy-duty trucks, their fuel consumption per transport work unit has been one-third to one-half as low as for gasoline engines.

At present the highest degree of dieselization is recorded in the FRG and Czechoslovakia. In individual years during the 1970-1976 period the (weight) ratio between the consumption of diesel fuel and gasoline in these countries was within the limits of 2.5-3.5:1. In Canada, and particularly in the United States, during the same period more gasoline was consumed so that the weight ratio in these countries was 0.95:1 and 0.5:1, respectively. Recently, however, the situation has changed and emphasis is being placed on dieselization in all the industrially developed countries. Diesel engines are becoming more widely used not only in buses and trucks but also in passenger cars. In 1977 approximately five million diesel-engined passenger cars were built abroad. It is expected that by the mid-1980's the production of diesel-engined passenger cars in the principal capitalist countries will reach approximately 15 percent compared with 3-5 percent during 1970-1973. The opinion is expressed that by the late 1990's the volume of output of diesel trucks in West Europe will reach 90 percent and in the United States, 30-40 percent.

In the USSR the conversion of motor vehicles to diesel traction causes certain extremely complex problems which include: a) The supply of diesel engines for the motor vehicle fleet (their production can be expanded by accelerating the full-capacity activation of the Kama Motor Vehicle Plant and building a new plant or expanding production in existing plants); b) the supply of automotive industry with additional metal. As is known, a diesel engine is 12-25 percent heavier than a gasoline engine of the same capacity.

Our calculations show that increasing the degree of dieselization of transport from 25 percent in 1975 to 65-70 percent will in the long run require a 14 percent increase in metal consumption. Assuming that the average diesel engine is 12 percent heavier than the gasoline engine, expanding the volume of dieselization to 65-70 percent would require a 3.5-4 percent increase in metal consumption, but since, as a rule, the diesel engine is 25 percent heavier (and sometimes still heavier) than the gasoline engine, the demand for metal will increase by roughly 14 percent. On the scale of the entire branch this figure becomes extremely substantial. Moreover, expanding the output of diesel-engined motor vehicles also requires additional FPR. This illustrates the importance and urgency of conducting research into reducing the weight of diesel engines.

In the near future the advantages of dieselization will increase for the following reasons: a) There exists a trend toward bringing the weight indexes of diesel engines closer to the weight indexes of gasoline engines through improvements in parts machining technologies, increases in diesel r.p.m., and the use of supercharging; b) the cost of the diesel engine will be brought closer to that of the gasoline engine owing to a rise in the cost of the latter (increases in compression ratio, introduction of direct



fuel injection, electronic ignition systems, etc.); c) diesel engines have greater capacity; d) the price of diesel fuel on the world market is one-half or less than one-half as high as that of gasoline.

A major factor in fuel economy is reducing the weight of vehicles by reducing their size and using lighter materials. Numerous foreign estimates show that reducing the vehicular weight can save as much as 15-30 percent of fuel depending on the type and purpose of motor vehicle. Intensive research in this direction is underway in many countries. Predictions of United States scientists on the weight proportions among individual materials used in the production of American passenger cars are tabulated below:

(In Percent by Weight of Materials Used)

Material	1975	1980	1990
Steel	61	57	54
Iron	16	14	8
Aluminum	3	6	12
Plastics	4	7	9
Others	16	16	17

As can be seen from this table, the share of steel and especially of iron will in the long run inevitably diminish and that of plastics and aluminum, increase. There also exist forecasts predicting a much greater increase in the share of aluminum (to as much as 30 percent).

Research into reducing the weight of motor vehicles is also underway in the USSR. For example, designers at the Minsk Automobile Plant are working to develop an aluminum body for dump trucks.

A major direction in FPR conservation is the use of more economical engines. Analysis shows that between 1924 and the present the unit consumption of gasoline has decreased by about 25 percent (chiefly through increases in compression ratio and in gasoline octane number). However, the potential in this direction is still far from completely exploited; its exploitation will serve to reduce unit fuel consumption by 10-12 percent compared with the 1975 level. In certain cases gasoline with the same octane number is used in engines with different compression ratios, which results in its excess consumption in the engines with low compression ratios. Thus, there exists a definite possibility for making gasoline engines more economical by increasing the compression of fuel and using the high-octane types of fuel. This can be accomplished not only by broadening the range of output of high-octane gasolines but also through other measures: preliminary gasification of low-octane gasoline in the automobile resulting in the inflow of high-octane products to the engine cylinders, etc. Of course, provided that the composition of the exhaust gases will not deteriorate. More detailed studies are needed in this direction.

The introduction of lean mixtures, direct injection of gasoline into cylinders, and the use of electronic ignition systems will help markedly reduce fuel consumption (by 6-12 percent for each of these measures). According to various sources, the electronic ignition system can enhance engine operating economy by from 6-8 to 10-15 percent and hence work on its introduction is becoming intensified. It is assumed that in the United States the cost of the electronic equipment ordered installed in motor vehicles will increase from \$150 million in 1976 to \$940 million in 1985, that is, more than sixfold.

Undeservingly little attention is paid to the development of engines lacking connecting rods, for automotive and other types of transportation. Such engines display advantages such as greater operating economy, (several times) higher capacity, and smaller dimensions and weight. These engines can be designed to burn either gasoline or diesel fuel. The replacement of two-stroke diesel engines with their four-stroke counterparts has contributed to a 10-12 percent reduction in unit fuel consumption. A further increase in the operating economy of diesel engines by 5-8 percent can be accomplished by refining the operating process, improving the quality of the machining of the piston-cylinder block, utilizing the heat of exhaust gases in the turbocompressor, etc. Experimental work on the development of engines with other, more economical cycles should be accelerated. FPR savings in motor transport also depend on the condition of the roads. Hence, the construction of new hard-surfaced motor highways is a highly important problem.

The scarcity of reliable primary data extraordinarily complicates the determination of the true losses of fuel due to poor roads in this country as a whole. The data available on this question are contradictory. As is known, the friction coefficient of wheel wobbling, which determines the vehicular drag factor, may vary from 2-8 times depending on road quality, and sometimes even as much as 15 times. Hence rolling stock in loaded state moving at a regular speed of 30 km/hr must increase its fuel consumption by a factor of 2-2.8 times when passing from cement and asphalt-concrete roads to unsurfaced roads. However, tests by the NIAT [Scientific Research Institute of Automotive Transport] show that then the fuel consumption for individual motor vehicles increases much less--by 10-20 percent. Since these figures are contradictory, we performed parametric calculations of relative (toward 1975) savings of fuel as a function of fuel consumption on unsurfaced roads compared with hard-surfaced roads, and with respect to overall length of new roads built during the period considered. Our figures demonstrate that in certain cases fuel savings may reach from 2-3 to 14 percent of total fuel consumption.

The extent of FPR savings is also influenced by installing spoiler on trucks and truck-trailer trains with the object of reducing aerodynamic drag.

According to a law of aerodynamics, the resistance of air to a moving vehicle is directly proportional to the drag coefficient (streamlining) of

the cross sectional area and the square of the rate of motion. The drag coefficient of trucks is two to three times as high as that of covered-body passenger cars. Hence the use of spoilers in the motor transport of the United States, FRC, England, France and other countries reduces aerodynamic drag and results in fuel savings of 4-20 percent at traveling speeds of 60-110 km/hr, according to road test data. Although the RSFSR Ministry of Motor Transport restricts traffic speeds to 60 km/hr, in practice this limit is fairly often exceeded, especially when transporting freight on European motor highways, which results in a 10-15 percent excess fuel consumption.

In addition to the above measures, the following are important to FPR savings:

- a) Optimization of the structure of trucks by widening the range of their capacities in the direction of lower and, particularly, higher capacities compared with the current range, as well as broadening the production of trailers (savings of 5-10 percent);
- b) Enhancement of automotive transmission efficiency by using new transmission gearing lubricants and bearings (savings of 3-5 percent);
- c) Increasing the share of radial tires in the motor vehicle fleet (savings of 5-10 percent);
- d) Development of effective methods for utilizing the heat of engine exhaust gases (savings of 5-10 percent) and recuperating the kinetic energy of the motor vehicle (15-30 percent);
- e) Reduction in the consumption of liquid petroleum fuel by using other FPR: products of coal processing, shales, peat, natural and synthetic combustible gases, hydrogen- and methanol-based fuels, and also through the development of low-displacement urban electric (storage battery-powered) motor transport and by broadening the network of urban bus and trolley lines. Calculations show that in most cases the new fuel types named above display more favorable ecological characteristics than do currently used fuels.

Considerable potential for fuel savings lies latent in improvements in the systems for the organization of hauls and operation of motor transport. Currently the motor transport of the national economy is under the jurisdiction of 15 Union republics and about 50 Union ministries and departments, which complicates the conduct of a fixed technical policy as regards the efficiency of performance of transport work, maintenance, repairs, fuel savings, etc. As a result, unit fuel consumption of departmental motor transport (of the ministries and departments) is shown by IKTP [Institute of General Transport Problems] statistics to be 40-45 percent higher than that of public motor transport, where labor productivity is roughly twice as high and transportation cost is lower. It is expedient to carry out on a national scale the maximum possible centralization of the administration of activities of the national-economic motor transport and to set up larger motor transport establishments. In

addition, it is desirable to further centralize the repairs of automotive equipment and concentrate them within the system of the USSR Ministry of Automotive Industry. At present these repairs are handled by about 800 enterprises subordinated to different ministries and departments, and often unit fuel consumption of repaired motor vehicles is 8-10 percent higher than that of new vehicles.

Thus, the sooner the problems of increasing the share of freight carried by diesel transport to 65-70 percent are solved and the other above-mentioned measures are carried out, the less strain will exist in the long run on the fuel and power balance, especially regarding light petroleum products.

A major consumer of FPR is railroad transport. Here, savings in and increased efficiency of utilization of FPR can be expected through:

- a) Increasing to 70-80 percent the share of freight carried by electric traction;
- b) Development and introduction of more economical (by 7-9 percent) AC electric freight and passenger locomotives with higher per-axle loads (25-30 tons), electric braking, and power regeneration;
- c) Development of more economical (by 8-10 percent) high-capacity diesel locomotives with four-cycle engines, maximum utilization of the heat of exhaust gases, gas-turbine and diesel-gas-turbine powerplants and, in a more distant future, power plants based on fuel elements and chemical storage cells;
- d) Increasing the weight of freight trains by 25-30 percent;
- e) Reducing the aerodynamic drag of trains at speeds exceeding 60 km/hr by utilizing the worldwide experience in reducing the aerodynamic drag of trucks and truck-trailer trains;
- f) Accelerating the conversion of freightcars to pendulum bearings;
- g) Expanding the transit capacity of the railroads (construction of second tracks, broadening of track maintenance facilities at stations and in marshalling yards, etc.);
- h) Partial conversion of diesel locomotives to gaseous fuel;
- i) Development and introduction of trains with magnetic suspension.

Air transport, too, has problems of its own as regards FPR economies. Analysis of the composition of the aircraft fleet of the airlines belonging to the International Civil Aviation Organization (ICAO) (except the USSR and the Democratic People's Republic of Korea) shows that during the 1967-1976 period the number of turbojet-engined aircraft increased by

130 percent while the number of piston-engined aircraft decreased by 46 percent. The number of turboprop-engined aircraft increased until 1972 but thereupon began to diminish. The dominant type of aircraft became the turbojet-engined aircraft, chiefly the twin-engined kind, with its incontestable advantages of greater safety, flight speed, and thrust, and lower engine noise. The further development of foreign aviation and the structure of its aircraft fleet are considerably influenced by the fuel price hikes.

In the USSR aviation develops similarly. From the standpoint of fuel economy, the presence of a large number of turboprop-engined aircraft in the civil air fleet of the USSR is a favorable factor, since for this type of aircraft the unit fuel consumption per transport work unit is one-third to one-half as high as for twin-engined jet aircraft. However, the gradual withdrawal of the economical turboprop-engined aircraft from operation and the corresponding increase in the share of the faster but less economical twin-engined jet aircraft has resulted in an increase in the group unit fuel consumption per transport work unit and in a corresponding change in the volume of that consumption. Hence arises the need to, on the one hand, preserve a certain proportion of turboprop-engined aircraft in operation satisfying the present-day scientific and technical level and, on the other, to develop fanjet-engined aircraft. Second, the work to modernize existing and newly built twin jet engined aircraft so as to improve their fuel economy by increasing engine efficiency, reducing aerodynamic drag of the aircraft, using lighter materials, lengthening the airport takeoff runways, improving the maintenance systems, etc. should be accelerated. Such measures could reduce the unit fuel consumption of twin-jet-engined aircraft by 25-30 percent.

As for maritime transport, it is characterized by a rise in the demand for motorships with low-r.p.m. diesel engines compared with the less economical steam-turbine ships. Although in the last 10-15 years the USSR sea-going merchant fleet has become extensively modernized through complementing with economical ships, the state of the fuel problem poses new and more rigorous requirements to the technical-economic characteristics of that fleet. Hence the following are important trends in FPR conservation:

a) Use of combined marine powerplants to save 8-15 percent of fuel. This includes such types of powerplants as: 1) steam-and-gas powerplants (those with a combustion chamber, a high-pressure steam generator and a turbine operating on a mixture of water vapor and combustion products; those with a gas turbine, a steam generator utilizing its exhaust gases, and a steam turbine with an electric power generator; those with a marine diesel engine, a recuperative gas turbine, and an electric power generator; and those with a marine diesel engine, a steam generator (utilizing exhaust gases), a steam turbine, and an electric power generator) and 2) powerplants based on the magnetohydrodynamic (MHD) effect (MHD generators based on nonequilibrium plasma) with deep regeneration or with extraction of heat for the steam-or gas-turbine cycle, as well as those based on two-phase MHD generators (in the long run);



- b) Increasing the efficiency of diesel-engine and steam-turbine plants by improvements in performance, in quality of fuels, and in the machining of engine components (savings of 5-10 percent);
- c) Increasing the efficiency of transmission gearing by means of new lubricants, bearings, and control systems (5-8 percent);
- d) Improvements in fleet structure as regards cargo capacity of ships, types of cargo conveyance, and traveling speed (5-15 percent);
- e) Reduction in hydrodynamic drag through improved streamlining of hulls, use of barnacle-resistant hulls and bottom coatings based on surface-active substances (savings of 5-8 percent);
- f) Replacement of organic fuel with nuclear fuel on large-tonnage ships (the icebreaker fleet, tankers, container ships, etc.).

As regards river transport, the rising volume of cargo turnover and fuel consumption requires the conduct of the following FPR-conservation measures:

- a) Development of recuperative-cycle diesel engines with a (8-10 percent) more economical performance;
- b) Increasing the efficiency of transmission gearings through the use of new lubricants, bearings, and control systems (savings of 5-8 percent);
- c) Reducing the hydrodynamic drag on ship hulls (savings of 5-8 percent);
- d) Increasing the cargo capacity of ships and barge trains to 20,000-25,000 tons, supplying "sea-river" type motorships that can cruise on both the sea and rivers, as well as 6,000-7,000 HP towing tugs and other ships of new design, and developing special-purpose ships suited to the specific features of cargoes and fluvial waterways;
- e) Establishment of a unified deep-water system of inland waterways and equalization of their depth.

There exist substantial possibilities for saving FPR through more efficient forms of transportation, e.g., by switching freight from rail transport to pipeline transport. Another example: In Kazakhstan and Central Asia motor transport and aviation are extensively used and will, together with the tractor fleet, consume 14-15 percent of all of the nation's total consumption of light petroleum products. The satisfaction of the rising demand for fuel in those regions requires setting up petroleum refineries.

In terms of per unit of transport output (freight and passenger transport) motor transport consumes 11.5-13 and 1.16-1.67 times as much fuel respectively (the first range of numbers pertains to diesel-engined motor vehicles and the second, to gasoline-engined ones) as railroad transport. Hence,



to reduce the consumption of liquid fuel, it is expedient to consider the question of the accelerated development of the railroad network in those regions and of transferring part of freight and passenger traffic from motor transport and aviation to the railroads. Of major importance is the broad development of special types of transportation--hydraulic (slurry pipelines), pneumatic-container, and others.

At present the volume of transport work handled by individual types of transportation is determined according to the needs of the national economy with allowance for distance of transport on condition that the expenditures to the national economy be minimized. The expenditures on FPR are computed according to the applicable prices. In view of the definite fuel problem, the structure of the conveyance of freight and passengers by individual types of transportation needs revising with allowance for the presumed marked increase in the cost of light petroleum products during the next 10-20 years.

Our calculations show that in individual types of transportation fuel consumption per unit of transport work can be reduced through various measures by 10-35 percent against the 1975 level; this is generally in accord with foreign predictions.

However, the exploitation of that potential is no simple problem. As was pointed out above, substantial organizational, scientific-technical and other difficulties will have to be overcome.

The most important problem is the partial replacement of the current pool of means of transportation, which includes quite a few obsolete 15 to 20 years old machines, with new more economical models developed or produced in the last year or two, as well as with those scheduled for production within 3 to 5 years. The accomplishment of this replacement requires considerable capital investments and material and manpower outlays, which will take up a considerable period of time. Particularly urgent is the problem of determining economically substantiated optimal proportions in the distribution of capital investments between the fuel industry and transport, since capital investments in the extraction, transportation, and processing of one ton of conditional fuel are three to six times higher than the investments in fuel conservation. This question has been relatively uninvestigated in view of its complexity and intricacy, particularly with respect to individual branches and types of fuel. It can be solved following a more detailed drafting of a long-range program for the development of the nation's fuel and power complex and the drafting of a FPR conservation program for the entire national economy, upon combined technical-economic analysis of FPR. Although some work in this direction has been accomplished by the USSR Gosplan and its institutes (the VNIKTEP, the IKTP, and the NIIPIN), it has yet to be made more specific and definite (more precise determination of fuel conservation levels, of demand for capital investments, equipment, materials, etc.) by enlisting the active participation of ministries, councils of ministers in the Union republics and branch scientific research institutes.

The exploitation of the aforementioned types of fuel conservation potential in transport requires resolving the following questions:

In machine building: modernization of the machine tool pool of the machine building industry (withdrawal of obsolete and worn equipment, provision of enterprises with more productive and precise machine tools), and introduction of new technological processes for the machining of parts.

In the petroleum refining industry: development and expansion of output of higher fuel grades (improvements in antiknock properties, reduction of proneness of scaling, increase in completeness and stability of combustion, etc.), oils, and additives.

In the metallurgical and chemical industries: development and introduction of highly heat-resistant materials for piston and gas-turbine engines, as well as of light weight and other metal alloys and composite materials for aircraft, automobiles, and other means of transportation.

In the transport ministries: acceleration of the introduction of automated transport control systems and the coordination of conveyance by various types of transportation; improvements in the repair and maintenance of transport facilities; and development of effective means of moral and material stimulation of workers.

Increasing the economical use of fuel in USSR transport requires a new expansion of scientific research in all the directions considered above as well as considerable attention to be paid to the elucidation and discussion of these problems in the scientific literature and at scientific-technical conferences and symposia.

It should be emphasized that, as analysis shows, the introduction of most of the ways and means of fuel conservation considered above will be accompanied by other extremely important economic and social consequences: a rise in labor productivity, improvements in operating conditions of means of transportation, a decline in environmental pollution, etc. All this will serve to elevate still higher the scientific-technical and economic potential of this country.

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## TRANSPORTATION

### PROVIDING TRANSPORT FOR WESTERN SIBERIA

#### Oil and Gas Complex

Moscow VODNIY TRANSPORT in Russian 4 May 79 p 2

[Text] The program for the further development of the Western Siberia oil and gas complex is unique both in terms of the scale of costs and the final results. For these indices, the program exceeds the program for the economic development of the Baykal-Amur Railroad and the construction of the Volga Automobile Plant, the Kama Automobile Plant, and the Atomash, together. The only program that is comparable to it is that of the agricultural development of the nonchernozem zone in the RSFSR. By the close of the 10th Five-Year Plan, Western Siberia will support the entire growth in the production of crude oil in the USSR as well as approximately 80 percent of the production of natural gas. During the 1980s, the area will maintain its leadership in covering the additional demand of the national economy for crude oil and natural gas.

The establishment of territorial and industrial complexes in Western Siberia is taking place within the framework of the solution of a large-scale national economic problem: the building here of the primary petroleum extracting base in the country. The contribution of this region to the national volume of oil production in 1975 exceeded 30 percent. Approximately two-thirds of the growth in the all-union volume in the production of energy resources (based on reference fuel) during the current five-year plan will be accounted for by Western Siberia. At the same time, it is well known that the work in the poorly developed economic regions with exceptionally harsh soil and climatic conditions has only recently begun. Almost 80 percent of the land containing the petroleum fields is covered by swamps; while the gas deposits are situated in permafrost. This means that there must be a unified effort of a wide circle of sectors and scientific and design

institutes as well as solutions to the most serious scientific and technical problems. Although much has been accomplished already, an immense amount of work remains to be done. The creation of a new primary fuel and power base in Western Siberia is a long-term program. It had its beginnings during the Eighth Five-Year Plan and its completion is predicted to occur by 1990.

Results have been achieved in recent years that are unheard of in world practice. Over a 15-year period, more than 1 billion tons of petroleum have been produced in central Priob'. In fact, the USSR became the world leader in the production of this type of fuel and raw material thanks to the development of the Western Siberia base. A center for the extraction of natural gas also was established. The center is located on 500 to 600 kilometers north of central Priob'. The potential for the simultaneous production of oil and gas, their extensive processing owing to the presence of cheap coal and water, as well as the massive scale of work are transforming the Western Siberian plain into a region that is practically incomparable with others in the country. The effectiveness of the new oil and gas complex can be judged by the following figures: capital investment here will total 25 billion rubles during the 10th Five-Year Plan, the total output of hydrocarbon raw materials (for conversion into crude oil) will reach 1.7 billion tons, and its value will total approximately 100 billion rubles based on world prices.

During the building of the oil and gas complex, successful technological decisions were identified and implemented for the drilling of wells, the construction of buildings and other structures, the installation of transportation links, and the use of highly productive motor vehicles, bulldozers, and pipelayers. This made it possible to accelerate the development of the deposits and to lower the proportionate costs for some resources. For example, more than 300 million rubles were saved during the outfitting of the Samotlor deposit. The costs of the construction of 1 kilometer of road have been halved over a 10-year period, while the operating efficiency of the road has been increased. The establishment of the complex required the relocation of approximately half a million people to the Tyumenskaya and portions of the Tomskaya Oblasts from Western Siberia, the Urals, along the Volga, and other areas.

The formation of the oil and gas complex in Western Siberia on Tyumenskaya and Tomskaya Oblast lands has been accompanied by the further development of already formed territorial and industrial complexes and the creation of new ones, including those in neighboring oblasts. In the previous decade, the foundations were established for the central Ob' territorial

and industrial complex in the vicinity of the middle reaches of the Ob' and for the southern Tyumen' territorial and industrial complex. Establishment of the northern Tyumen territorial and industrial complex began with the development of the gas fields. The construction of the Tomsk petrochemical complex served as a powerful incentive for the development of the Tomsk industrial center.

All of these territorial and industrial economic organizations are located at differing stages of their development; consequently, they will carry out different functions in the establishment of the Western Siberia oil and gas complex. However, the commonality of their ultimate national economic objectives in terms of the development of the oil and gas complex is reinforcing their economic and operational ties, which should lead in the long term to the establishment of a complex system of territorial and industrial complexes acting as a unified economic organization within the Western Siberian plain.

The central Ob' territorial and industrial complex is entering into a stage of the intensive formation of the intersectorial economy. As in the past, the primary industry during the 1980s will be petroleum extraction, along with the associated processing of casinghead gas. During the new, forthcoming decade, the central Ob' territorial and industrial complex apparently will assume new economic functions when it becomes a base of support for the development of the pri-Polar areas in the Tyumenskaya Oblast. Fundamental problems are related to the intensification of the intersectorial communications within the complex. It has become critical to strengthen the centralization of repair services, interarea transport, and social and services projects.

A second complex --the Tyumen'-Tobol'sk, or southern-- is being constructed as a rear base for the development of the northern and central Ob' deposits. This complex will produce 35 percent of the gross industrial production in the Tyumenskaya Oblast. The main transport center of Tyumen' and Tobol'sk is located in this region. More than 80 percent of the goods destined for the north and for central Priob' are forwarded through the center. In the long term, the southern territorial and industrial complex will broaden its support to the oil and gas regions. Specifically, plans are to organize for the production of drilling and other oil and gas production equipment and electrical equipment, and to increase the construction of river vessels. The complex will become a large center for the intensive processing of timber and production of chip board, unfinished furniture, and wooden houses.



With the opening of the Tobol'sk petrochemical complex in the near future, a new sector will be established: the petrochemical sector. Reverse economic ties between the northern Tyumen' and central Ob' and the Tyumen'-Tobol'sk territorial and industrial complexes will be strengthened. Construction of the Surgut-Tyumen' transmission line, which will allow the maneuvering of power sources, also will make a contribution. It must be mentioned that the northern Tyumen' territorial and industrial complex is in an early stage of development. Its main sector is the extraction of gas. Eventually the volume of production will reach 300 to 320 billion cubic meters of natural gas. But specialization will be expanded in the long term. Production of condensate at the Urengoy deposit has begun here. New oil fields also will be worked in the north, including the Russkoye deposit.

Three industrial points are being established in the northern Tyumen' territorial and industrial complex: Salekhard, Urengoy, and Nadym. Urengoy could become a base city for the development of the Komsomol'sk, Gubkin, Yamburg, Taz, and other deposits. The city of Nadym is being built at the base for working of the Medvezh'ye deposit. Salekhard is becoming a transportation center and a support point for the development of the Kharasavey and Novyy Port group of oil fields.

The region in the vicinity of the Urals is poorly developed in industrial facilities. The Shaim and Verkhne-Kandinskiy are the only industrial points that stand out here. The Shaim point specializes basically in the extraction of oil. Verkhne-Kandinskiy is a traditional timber center with local woodworking. Additionally, the greatest amount of gas is extracted here. If the flow of construction goods from the vicinity of the Urals to Urengoy is increased, the prospects for this industrial point could change. On the other hand, the role of the Tomsk industrial center in the production of oil, and particularly in petrochemical production, also could expand in the long term. The discovery of paleozoic oil is expanding the raw material base substantially, and will raise the volume of oil production to at least 20 million tons, which would transform the Tomskaya Oblast into one of the most important areas for oil production. A chemical combine which is being built here will become the largest in the country.

The petrochemical industry also is becoming important to the economy of Western Siberia. Calculations show that it would be worthwhile to develop petrochemical complexes of the Tobol'sk type, with a high concentration of production that would exceed that of the central part of the country by two or three times over. As a result, the proportionate capital



investment would be lowered by 20 to 30 percent and production costs by 10 to 15 percent. The creation of a unified, large-scale petrochemical complex in Siberia could release 4 million more tons of oil a year in comparison with the siting of the complex in the European sector of the Soviet Union. At any rate, to satisfy the demand of the European complex for fuel and energy, it would be necessary to increase the supply of oil sent there for conversion to mazut.

The establishment of large-scale petrochemical complexes in Siberia will make it possible not only to satisfy local demands for products but also to export them. Here it must be kept in mind that the price of petrochemical output is 5 to 10 times greater on the world market than that for oil. When justifying the direction of the development of petrochemistry in Siberia in the short term, it was proposed that large-scale enterprises be built in the Angar-Yenisey region, central Priob', and Kuzbass, in addition to projects that have already been built. The rise in the cost of construction resulting from the siting of petroleum complexes in Siberia is justified by the energy savings over a three-year period of their operations.

#### Transport Network Development

Moscow VODNIY TRANSPORT in Russian 5 May 79 p 2

[Text] The rate of development of the transport network during the economic development of the Western Siberia plains substantially has lagged behind the rate of capital construction and the working of the fields. A new oil base was established even in the absence of a railroad link with the regions that are the suppliers of construction materials, vehicles, and machinery. From the start, there also was disagreement over the development of individual types of transport because of differences in the quotas for their financing and the lack of a unified scheme for the formation of a transportation network.

The underestimation of the importance of the transportation factor was reflected in the design, the planning of capital investments, and the supply of materials and equipment. Many design decisions only took immediate interests into account and ignored long-term requirements. As a result, even though the USSR Ministry of Transport Construction did complete the building of the Tyumen'-Tobol'sk-Surgut railroad, its carrying capacity falls by far to meet the region's needs for the shipment of freight. The Ministry of the River Fleet RSFSR for a long time refused to do any major work on the navigable shallow rivers, which at times were the only means of supplying

the urgent needs of the sites at which oil and gas exploration and the working of huge fields are being carried on.

Today general purpose transport primarily supports interregion shipments. The transport balance of the oil and gas complex generally will continue to be passive in the foreseeable future, even in the face of changes in the structure of shipments and the growth of exports. Approximate calculations reveal the following dynamics for the handling of goods from various areas including those from Tyumen' for the outfitting of oil fields: for the 10th Five-Year Plan, up to 20 million tons in 1980; and slightly higher for the 11th Five-Year Plan. The volume of freight shipments also will rise substantially in the period beyond the upcoming five-year plan. At the same time, the total requirements of the oil and gas complex for the delivery of freight for the construction program could reach 80 million tons during 1980.

The primary volume of freight is for the northern regions, where important capital construction projects are being built and where deliveries are made during the short navigation season. Seasonal deliveries on the one hand create uneven loads on the transportation network during specific periods of the year; conversely, organization for the implementation of the development of the oil and gas complex is highly dependent on transport operations. At the same time, the transport carrying capacity in the face of the evolving freight flow must be considered unsatisfactory.

The collective of the Novosibirsk Department of the State Institute of Planning River Transport in recent years has conducted large-scale and useful studies and has completed the scientifically based design of river transport projects in Western Siberia. It also has solved a series of other problems associated with the development of an oil and gas complex. The conclusions of the experts and river workers are extremely valuable and must be taken into consideration when solving problems connected with the complex development of the transport network in this important region.

The fact is that a large amount of the new and evolving industrial centers in Western Siberia are oriented toward the use of water transport. Today the waterways in the Ob'-Irtysh basin operated by the Irtysh and Western Siberia shipping lines extend for 30,000 kilometers. They also serve as primary links to the vast lands of Western Siberia, particularly to the north of the Tyumenskaya and Tomskaya Oblasts. During the initial stage of the development of the oil and gas fields in the area, the primary burden for the handling of freight shipments was

placed on the shoulders of the river workers. The proportion of local shipments within the Tyumenskaya and Tomskaya Oblasts handled by river transport reached 85 percent.

The development of the oil and gas fields and the construction of oil pipelines, the Tyumen'-Surgut railroad, and all of the other projects connected with the economic development clearly have become possible because of the efforts of river transport. Special measures for a sharp increase in the number of vessels and their carrying capacity were adopted in the shortest possible time. Long before the construction of the pipelines, Siberian oil was incorporated into the national economic turnover through the help of the river workers who transported the oil in bulk oil carriers during the initial days of industrial extraction. In this initial stage during the Ninth Five-Year Plan, the river fleet in Western Siberia increased freight shipments for the oil and gas industry by almost one-and-a-half times. Today and into the future, shipments of national economic freight once again are and will increase dramatically.

Nevertheless, the contribution of water transport in the development of the productive forces is still inadequate. There are many reasons for this. The growth of the material and equipment base of the river shipping lines is not being carried out systematically nor meaningfully, nor is it balanced within all of the components of water transport management. Rather it is characterized by the frantic liquidation of bottlenecks, with the objective of supporting shipments for the development of oil and gas and other sectors within the complex at any cost.

Despite the fact that the Tomsk, Tobol'sk, Surgut, and Kolpashiev ports have been opened in recent years, the carrying capacity of the harbor and pier management lags behind the transport capacity of the fleet. This is primarily to the detriment of the northern points where freight normally is unloaded on to ill-equipped shores in violation of technological requirements and storage rules. Naturally this all leads to huge excesses in standing time for the vessels.

A serious situation has been created that rapidly is lowering the effectiveness of the use of water transport, which must solve the primary transport tasks in this region currently and in the foreseeable future. If measures are not taken quickly to expand broadly both the construction of departmental piers at cargo arrival points and modern ports, then the growth of the transport fleet will lag behind the growth of shipments. Already the Western Siberian shipping line is unable to fulfill orders for the shipment of 2 million tons of freight during 1979, including almost 1.5 million tons of navigable shallow

river cargo. The situation is even more drastic in the Irtysh basin. Some ministries and departments that contain large enterprises along the waterways are inadequately developing harbor and warehouse management and are groundlessly oriented to shipping raw materials and production output primarily by rail. This is one of the fundamental reasons why the river system is not being exploited effectively.

The freight that is delivered to the northern regions of the Tyumenskaya Oblast is addressed to a multitude of departments. Up until the present, coordination of the cargo consignees in Western Siberia has been practically nonexistent. They are committed to the management of the piers solely for their own departments. The Ministry of Petroleum and Gas Construction is planning for the construction of 400 meters of pier wall in Nadym. The Ministry of the Gas Industry also has planned for 200 meters of wall in the same area, and the Ministry of the Power Industry is planning for 50 meters. All of this construction is being planned not as a unified port complex but as conventional, separate piers. But it is well known that what is actually needed in Nadym is a large port with a cargo turnover of more than 2.5 million tons and a pier wall with a total length of up to 2,000 meters.

The departmental approach to the construction of mechanized piers is causing disorganization, the dissipation of capital investments, and increased costs for construction and operation. A broad approach that responds to the optimal technological handling and storage of cargo at minimum cost is needed. The Novosibirsk Department of the State Institute for Planning River Transport should be designated the head design organization for river facilities in the Western Siberia basins. This collective is qualified and has solid experience in the design of projects in the eastern regions of the country. Moreover, the technical and economic bases for the allocation of capacity and priorities for the construction of ports and wharfs for the oil and gas industry must be completed in the near future.

Tangible results can only be achieved through coordinated efforts. Nevertheless, the solutions to problems in the building of piers in the cities of Kampa, Labytnangi, and other important settlements were long delayed, as was the construction of the second section of the port of Tomsk. The delay in the construction of a port in Sergino is generating astonishment. Located in the center of the gas-bearing region, the port could play a significant role in its development. Furthermore, the railroad was tied in with this region over 10 years ago and the appropriate conditions for the development of a highly mechanized port complex were created.



The shipping fleet in the Western Siberia basin until the present time has been replenished via the Northern Sea Route. But in the face of a substantial and steadily increasing requirement for river vessels this system is unacceptable over the long term. The time is ripe for the construction of a large shipbuilding base in the Ob'-Irtysk basin. It could be located near the city of Kama along the banks of the Novosibirsk Hydroelectric Power Plant reservoir. Besides the water approaches, this area also features the shortest railway connection with the metallurgical, machine building, and other plants in the region that could supply the shipbuilders with materials and equipment. Optimally designed ships for the navigation conditions and the cargo flow characteristics in the Ob'-Irtysk and other Siberia basins should be built here.

There are many navigable shallow rivers in the oil and gas bearing regions of the Tyumenskaya and Tomskaya Oblasts. Some of these are equal in navigation potential to other rivers that are already in service. Those we have in mind are the Vakh, Agan, Vasyugan, Trom-Yugan, and many others. Most of these have been poorly studied and some of them amount to nothing more than blank spots on the map. Workers are constructing transmission lines across these rivers, laying pipelines, and building bridges over them, but often without the slightest approval of water transport authorities or consideration of the interests of navigation. But intensive exploration for oil and gas is being carried out in these regions and new fields are placed into operation one after another. Consequently, a river that had not merited the slightest interest in the past quickly could become a unique transport junction. The time has come for the systematic study of the navigable shallow rivers and to draw up a precise classification scheme that will make possible the timely solution of problems connected with their use for transportation services.

The situation in which more than three fourths of the annual volume of cargo shipments must be handled during the navigation season has been in effect far too long. The transport system has been operating under great stress because of a shortage of traffic capacity. Poor coordination also has been prevalent between mixed types of transport. Between 1981 and 1985, the volume of shipments to the northern gas and oil fields will increase even more sharply. Construction of the Surgut to Urengoy road apparently will not satisfy the need for the formation of a reliable transport system. Moreover, increases in shipments from the north must also be kept in mind. These include timber, scrap metal, repair equipment, and possibly up to 20 million tons of liquid gas for the southwest.

The further development of the Western Siberia complex and the establishment of the nation's primary petroleum extraction base are largely dependent, both now and in the foreseeable future, on the efficiency and quality of water transport operations. In the short term, obviously it will be necessary to strengthen the management of the ports and wharves; if only by temporarily using floating loading and unloading facilities and platform jetties. Highly mechanized pier and port complexes meanwhile must be planned, designed, and built, not only in Tobol'sk and Surgut, but also in other important sites in the region.

The Western Siberia complex is entering into a stage of intensive development. The formation of the primary oil base in the country and the foundation of a region for the extraction of natural gas are being completed. It would be difficult to underestimate the role of water transport today in the solution of pressing national economic tasks. The water transport sub-organizations must support the constantly increasing shipments of freight and must systematically and completely untie the tight knots that are binding up the river lines. Close cooperation must be maintained between mixed types of transport. They must operate as a unified organization that has been created for the delivery of goods to the oil and gas regions of Western Siberia.

Time is now approaching the last boundary. It is in fact becoming a scarce resource in the implementation of the planned program for the creation of a primary petroleum base in the country. It is necessary, therefore, that time be handled very delicately, wisely, and with appreciation of the requirements of science and technology.

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